S.S. JEREMIAH O'BRIEN

Interpretive Training Packet

INTRODUCTION

The purpose of this training packet is to provide you with historical facts about the JEREMIAH O'BRIEN, as well as methods to effectively communicate her story to visitors.

For your convenience, the packet is divided into several sections. The first section explains what we mean by interpretation--the principles and techniques used to effectively communicate to others. The following sections outline the general history of Liberty Ships and the specific structure, function, and background of the S.S. JEREMIAH O'BRIEN. The last section describes various types of tours you may develop for special groups--children, the elderly, and the handicapped.

As you review the guide, you'll notice that many pages appear missing. We want to keep this training manual "growing" and we have left space to add new information as it becomes available. By comparing index titles with the guide's actual contents. you will understand the various materials needed to complete the book. If you find any information that you think should be added, please contact the park's Chief of Interpretation at 556-0560.

S.S. JEREMIAH O'BRIEN - Interpretive Training Packet

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SECTION III: S.S. JEREMIAH O'BRIEN - Structure

This section provides a simplified explanation of the ship's technical features and their purpose and operation.

SECTION IV. S.S. JEREMIAH O'BRIEN - History

This section details the naming of the ship, its role during and after World War II, and its present historical significance.

SECTION V: Life Aboard A Liberty

This section illustrates the routine duties of the officers and crew of a Liberty Ship and how their lives changed during a storm at sea. Some common nautical terminology is also explained here.

SECTION VI: Developing a Tour

This section presents methods to guide you in organizing, preparing, and presenting your tour. It also contains information on interpretation for special populations and examples of tours conducted aboard the O'BRIEN.

THE MEANING OF INTERPRETATION

Because interpretation can be almost limitless, its scope and direction must be in conformity with the mission of the National Park Service. The following guidelines summarize what most people believe to be the basic elements of the interpretive mission. Essentially, all relate to the primary purpose of interpretive services: engendering a love and respect and knowledge of those special places of natural beauty and historical significance which have been set aside in the National Park System. As with most great activities of mankind, the whole is greater than the sum of its parts.

Perception as the highest form of park use. All interpretive programs should seek to enhance the experience of the visitor. The abiding purpose of national parks is to bring man and natural and cultural environment into closer harmony. Interpretive programs should be designed to help people perceive and treasure the natural and historic processes through which the land and all living things have achieved their existence. Perception, then, should become the highest form of park use.

Preservation through appreciation. Interpretation can become the most effective device for preserving park values. One superintendent declared: "Interpretation is the frontal attack which through proper use can ease law enforcement probelms, get across safety, and aid the maintenance and littering problems." Visitors who are informed about the reason for park policies and who understand the threats to survival of the parks are more likely to become personally involved and to help in preservation efforts.

Realization of the educational potential of national parks. The Conservation Foundation Task Force on "The National Park System as an Educational and Cultural Institution" concluded "The National Park Service does not have to become an educational and cultural institution; it is already one. The Park Service boasts the nation's, if not the world's, largest, most generously endowed campus without walls." Such programs as the Yosemite Institute and the Rocky Mountain Summer Seminars provide models for utilization of national parks by educational institutions for programs of instruction from the elementary grades to the college level. In a time of intense pressure from enormous numbers of visitors, interpretation must also provide some in-depth programs. Parks are self-revealing, educative environments where park values can be understood by the visitor in a context which relates them to his own life and values.

Support of the environmental movement. In the not too distant past, interpretation was an activity which added much to the visitor's appreciation and understanding of national parks. Now the stage has been expanded. Interpretation is coming to be an activity which will add much to the visitor's appreciation and understanding of his world. "That drum surely has been beating loudly and clearly: parks today - a social force for an environmental ethic, and with interpretive programs at the hub of that force."

Outreach through environmental education. A participant in the Grand Canyon meeting, Bill Eddy, who directed production of the film "Earthbound" and the book Consider the Process of Living, described the role of environmental education programs such as NEED, STEP, and the Environmental Study Areas, all of which involve young people through the school systems:

> "These represent a specific and detailed involvement by the Park Service primarily in the public educational system throughout this country. Environmental education as defined in this context is not to be viewed as a substitute for, but rather as an extension of the interpretive program within each park. Its prime purpose is to amplify in national and even global terms a concern, with sensitivity to surroundings, similar to that expressed by local park interpretive programs. However, the particular role of environmental education within the whole of the national parks interpretive mission is to utilize existing school systems, social organizations and appropriate park areas to create a greater sensitivity to all natural processes and a greater awareness of them as a living organism."

Relevance to the interests and traditions of all visitors. The United States is a pluralistic nation; interpretive programs, particularly in historical areas, need to communicate this rich cultural diversity. As NPS is the steward of America's natural resources, it must also be the fair-minded steward, and the interpreter, of the cultural contributions made by the Indian, the black, and the Chicano, as well as the European.

Communication with young people. Presently, many young visitors are turned off by traditional terms of NPS interpretation. Yet both NPS and young people share many of the same goals; an interest in the future welfare of the parks, a sensitivity to natural and social values, a concern for environmental degradation. Interpretation should seek to build an alliance between NPS and young people through better means of communication. Programs which involve thevisitor as a participant, rather than as a spectator, are generally more successful.

Parks as examples of environmental integrity . Interpretation is a vital way of dealing with parks themselves, as well as of dealing with visitors. The parks must be managed and developed in a way that will complement, rather than contradict, the interpretive theme of environmental quality. NPS is on stage, front and center; it must pratice what it preaches.

Quality, the distinctive feature. There are many land-managing organizations that offer interpretive programs, just as there are many outstanding natural, historical and recreational sites administered by other Federal, state and private agencies. Once characteristic that should always identify NPS administration is that any facility put in a park and any program developed for a park should be distinctive for its quality. Whatever the medium and wahtever the goal of an interpretive program, it should be a quality performance. People have a right to be touched, to be moved, to be inspired by their visit to a national park. There is as much reason to restrict the number of people participating in an interpretive program, in order to preserve the quality of the program, as there is to restrict the number of people entering a national park, in order to preserve the quality of the park experience.

Above all, diversity. National parks are set aside because of their diversity. One of the great values of national park is its ability to offer a contrast to the environment in which most park visitors live. The strength of the environmental message is that all park ecosystems are interrelated and often interdependent. But this does not mean that all park interpretation should take on a sameness. People do not travel all the way from Florida to Mt. Ranier to hear a lecture on water pollution. A park interpretive program must begin with, or return to, the basic park theme.

Excerpt from:
A Report on National Park Service Interpretation
By: William C. Everhart, Director, Harpers Ferry Center
March 1973

WHAT IS INTERPRETATION ?

"The helping of the visitor to feel something that the interpreter feels- a sensitivity to beauty, complexity, variety, interrelatedness of the environment; a sense of wonder; a desire to know. It should help the visitor develop a feeling of being at home in the environment. It should help the visitor develop perception."

HAROLD WALLIN
(A chief naturalist for
the Cleveland Metropolitan Parks)

"It is an information service... a guiding service... an educational service... an entertainment service... a propaganda service... an inspirational service."

"Interpretation aims at giving people new understanding, new enthusiasms, new interests..."

"A good interpreter is a sort of Pied Piper, leading people easily into new and fascinating worlds that their senses never really penetrated before. He needs three basic attributes: Knowledge, Enthusiasm and A bit of the Common Touch."

YORKE EDWARDS (CANADA)

Interpretation is a process by which the public is brought, in an easy and enjoyable way, to a greater awareness, understanding, and appreciation of a park; its values and uses; and, through the park, of the total environment in which it lives. (Thoman)

"An educational activity which aims to reveal meaning and relationships through the use of original objects, by first-hand experience, and by illustrative media, rather than simply to communicate factual information.'

FREEMAN TILDEN

"The process of developing a visitor's interest in and enjoyment and understanding of, an area, or part of an area, by describing and explaining its characteristics and their inter-relationships."

THE COUNTRY RECREATION GLOSSARY (ENGLAND)

Interpretation helps the visitor...
"learn about his natural environment and the laws of life. It is a program
- that helps to make education a continuous process,
- that emphasizes avocational pursuits,
- that stimulates the proper use of leisure time."

HAROLD C. BRYANT
1936

"... the art of explaining the place of man in his environment, to increase visitor or public awareness of the importance of this relationship, and to awaken a desire to contribute to environmental conservation."

DON ALDRIDGE (SCOTLAND)

"Interpretation is the communication link between the visitor and...resource."

GRANT SHARPE

Whether we are talking about oil or Old Faithful, coal or Canyonlands, conservation or perpetuation, we must develop an ethic of responsibility in Utah, the United States and the world.

We stated this effort long ago - that is what our interpretation program and our environmental education efforts are all about. Develop a sense of wonder and understanding and respect for what you see, feel, taste, smell, and hear in your parks. Take it home and look around you. Try to understand that environment. Discover the seemless web that binds man to nature.

That is what we have been trying to say but we have been talking too softly. We need to shout!

Ironically we have had to practically disguise these efforts in the past in order to assure the availability of dollars. But we are coming out of the closet and our light will not be covered by a bushel. We will prepare for the administration and the congress an interpretive program that will more fully utilize the National Park System for what it truly is, a unique educational and cultural institution "the worlds largest and most generously endowed campus without walls."

I don't need to tell you what we do, but I need your help in telling others.

SIX PRINCIPLES OF INTERPRETATION

(from Freeman Tilden's Interpreting Our Heritage)

"In the field of Interpretation, whether of the National Park System or other institutions, the activity is not instruction so much as what we may call provocation. It is true that the visitors to these preserves frequently desire straight information, which may be called instruction, and a good interpreter will always be able to teach when called upon. But the purpose of Interpretation is to stimulate the reader or hearer toward a desire to widen his horizon of interests and knowledge, and to gain an understanding of the greater truths that lie behind any statements of facts.

"The national park or monument, the preserved battlefield, the historic restoration, the nature center in a public recreation sport, are exactly those places where Interpretation finds its ideal opportunity, for these are the places where firsthand experience with the objects of Nature's and Man's handiwork can be had.

"Here, then, are the six principles:

"1. Any interpretation that does not somehow relate what is being displayed or described to something with the personality or experience of the visitor will be sterile.

"2. Information, as such, is not Interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.

"3. Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical, or architectural. Any art is in some degree teachable.

"4. The chief aim of Interpretation is not instruction, but provocation.

"5. Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase.

"6. Interpretation addressed to children (say, up to the age of twelve) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program."

A FRAMEWORK FOR INTERPRETATION — *Dr. Larry Lowery, Associate Professor Science Education, University of California, Berkeley*

Frameworks are organizations of basic elements that might lead to a better understanding or general improvement of what we are doing. In practice, a framework can aid an interpretive program by identifying important aspects or problems, by keeping a program in some perspective to other programs, and by suggesting important areas that can be studied and/or improved.

One possible, descriptive framework for interpreter programs might be composed of three related factors and represented by three interwoven circles: 1) The Visitor — including the many aspects related to background experiences, perspectives, interests, and learning abilit 2) Interpretation —encompassing, in the broadest sense, anything that enables the visito better understand that which is to be experienced including the physical and non-physic structuring of the interpretive situation and the verbal and non-verbal interactions amo individuals; 3) The Subject — involving the organized knowledge and ways of knowin within the areas to be interpreted.

Although each circle of the framework can and should be examined as a discrete entity which contains its own elements, organizations, and regularities, the intersections of the circles, if carefully explored, examined, and properly understood, could help serve as a framework for improving interpretive programs.

THE VISITOR

Each visitor comes to a park area or other interpretive situation filled with certain preconceptions. Some preconceptions are accurate; some are inaccurate. Many visitors come motivated to better understand something. A few are just passing through. The visitor is a complex creature, and when visitors gather as a group, the combinations within the group are even more complex.

Certainly each visitor leaves an interpretive experience knowing something he had not known before or feeling something he had not sensed before. A change in cognition or attitude is clearly an indication that the visitor has learned something. If one considers the visitor as a potential learner, then much can be done to understand and cope with the complexity of visitors in any interpretive situation.

A few of the things we know for sure about learning are that:

1. People learn best from firsthand experiences. If a park interpreter pours some water on resurrection moss to demonstrate its properties, the experience for the visitor is indirect, however, if the visitor is allowed to pour the water, the experience, becoming personal and firsthand rather than passive and secondhand, has a powerful effect upon learning.

2. People learn best when an experience is close to them in time and space. It is difficult for a visitor to comprehend such ideas as *"The fossil in this sedimentary rock is four million years old and was set down beneath the waters of a great sea that covered one-fourth of the United States."* What people remember from experiences like this is that there was a sea shell in some dirt and the shell was very old. Powerful learning comes about by helping the visitor realize how one determines (today) that something is very old or how one comes to know (today) that a great sea covered such a vast area. An interpreter might allow visitors to interpret for themselves by asking, *"If a geologist studying this layer of sediment followed the layer as far as he could, like following a line, and found the layer in New Mexico, Texas, Louisiana, and several other states, what might that observation suggest to him?"* Such a question can bring a large or remote idea closer to the visitor's personal place in time and space, thus the concept will be remembered for a long time.

INTERPRETATION

Interpretive programs take on many forms from brochures and self-guided nature trails to campfire presentations and interpreter-led walks. The form discussed here involves the interpreter as a person in contact with other persons.

Doing interpretations is closer to being an art than it is a science. In attempting to determine the important elements that comprise interpretive skills, one is continually confronted with the problem that not enough of the good interpretive techniques have been identified, described, or organized in a way that allows the interpreter to use them on a consistent basis. Even though many systems for observing interpretive skills are now available (Flanders 1965, Amidon Ober 1968), one cannot be sure what the necessary elements for good interpretation are or if some still need to be created. Among the few that have been clearly identified involve using different types of : questioning strategies (recall, guiding, open-ended, and valuing questions can enable visitors to actively think about the experience); responding strategies (rewarding, clarifying, and accepting responses provide important behavioral models and often facilitate creative ideas on the part of visitors); structuring strategies (verbal, non-verbal, and physical structures can efficiently guide learning and improve remembering).

A few specific examples are:

1. Recalling after learning reduces the amount forgotten. At the end of an interpretive experience, a review of the structure or key points by the visitors (not the interpreter) facilitates learning. Artful questioning strategies help this to take place.

2. Acceptance of statements and questions made by visitors encourages visitors to think and interact with the interpreter. Being non-judgmental, this response strategy does not cut off creative or branching ideas.

3. Advanced organizers improve understanding. An advanced organizer is an early indication given by an interpreter of the experiences that will take place or the sequence of the key points to be experienced. As a structuring strategy, advanced organizers provide visitors with a mental structure that helps them interrelate ideas. The mental structure also improves memory of the experience.

THE SUBJECT

Although the subject for interpretation varies with locale, there are several ideas that might be considered for any interpretive topic.

1. The learning of processes related to a subject are more meaningful than the learning of content. How people come to know information is understood and remembered better than the information itself. Process learning is most easily developed by involving visitors in the firsthand experiences mentioned earlier.

2. Increasing the number of ways by which a visitor can look at something is far better than looking at many different things in just one way. If a visitor always looks at leaves only in terms of color and shape, then that individual is limited in what he can perceive in any environment. However, if a visitor is allowed to investigate firsthand, other characteristics of leaves such as venation, serration, tip variation, base variation, he will perceive many more possibilities in other situations. How many visitors have even really looked at a leaf? How many have ever noticed differences in leaf tips and bases?

The framework introduced as an advanced organizer at the beginning of this article, suggests that the value of an interpretive program is directly related to the inclusion and quality of the areas represented by the three interwoven circles. To omit one or more of the circles significantly reduces the value of the program. For example, if a person (The Visitor) came to a park area (The Subject) that had no interpretive program (Interpretation), the amount of understanding of the experience by the person would be minimal. When the third circle is included, the learning potential increases. Similarly, if only the interpreter (Interpretation) and a person (The Visitor) come in contact independently of the real environment (The Subject), the benefit to the person is diminished (Interpretive lectures at campfires and slide shows are examples of two-circle programs). Even an interpreter (Interpretation) and his topic (The Subject) are of little value if the visitor is not considered in the program (many self-guided nature trails are two-circle programs because they are designed without giving much thought to involving the visitor who might take the trail).

To this author, the goal of interpretation is not to interpret a situation for others but to enable others to interpret the situation for themselves. The framework is designed not to tell anyone how to do this but simply to open up the possibilities for what can be done.

Lawrence F. Lowery, Associate Professor of Science Education in the School of Education at the University of California, Berkeley (1965-present); Elementary and secondary school teacher, vice-principal, and principal (1957-1965); visiting professor at the University of Hawaii (1967); visiting professor at Rutgers University (1969); Member of AAAS, ASCD, NARST, NSTA, and other professional organizations.

Interpreting History

by Marcella Sherfy

The following article appeared in the National Park Service Publication, "In Touch," an interpreters information exchange. In it, Ms. Sherfy talks about the important elements needed to interpret historic resources accurately.

Joining the rails of the transcontinental railroad near Promontory Point, Utah, a National Historic Civil Engineering Landmark

An Ethic Beyond Accuracy

No National Park Service historian or interpreter will admit any virtue in factual error. Whatever our record, we aren't about to condone obvious historical inaccuracies. That's admirable, but only the beginning of the ethic implicit in the craft of history. What we'd better be about is *historical honesty.*

Historical honesty involves the kind of patience and tolerance and distance that often separates a historian from an antiquarian or buff. It is the intention to understand and present the events of the past on the past's own terms. It is the incredibly delicate task of both trying to put ourselves in the shoes of another generation and still recognize — daily — that we can't ever do so. It is, as well, applying the golden rule to historical research and interpretation.

That means, then, that being historically honest, we:

- have no right to assume that people of the past felt as we do about similar experiences or ideas.
- cannot ever imbue previous generations with our own political principles or values.
- cannot misleadingly "select" the facts we present to make the point that we'd like to make.
- dare not allow ourselves to think or tell others that we are portraying the past, when, in fact, we simply demonstrate some few physical activities or objects of a previous generation.

There is no more frustrating experience than to stand silent, unable to offer any explanations or qualifications, when someone pokes fun at us, takes our words out of context, bends our opinion to serve their arguments, or characterizes us with the unimportant minutiae of our life. The people of the past are in that position. And since we'll be there someday, too, it behooves us to be as thoughtful and honest with them as we want interpreters of the future to be with us.

That kind of honesty requires a different kind of research than that needed to determine the shade that was Civil War sky blue. But it is far more important. What we're about, after all, is *interpreting*. And for historians, that means *listening* to the people of the past and then *repeating* (not twisting or culling or exaggerating) their words and thoughts.

Time Past/Passed

The present watchwords of historical areas are "recreate" and "reenact." The standard beginning to a living history talk or interpretive schedule is "step into the past with us." And when asked what it is we want to do for visitors to a historical area, we usually respond "to make history live."

Those phrases may represent only the lessons of our high school public speaking course that taught us to engage our audience with a clever beginning. Or, particularly after years of use, they may express what we think we're doing. In either case, they're misleading and in a real sense dishonest.

What we're doing at any historical park is preserving and interpreting remnants — pieces of the past — that have survived to the present. Those remnants include buildings and fences and furniture and the skeletal outlines of some human thought and activity. Those remnants are surrounded by the rest of our parks or the rest of our actions or words. And we design that surrounding space or activity to *resemble* what we think might have existed around those remnants in the past. But, in no sense have we brought back or recreated the "past." And short of Star Trekian miracles, we won't. We can come closest physically, but even that won't ever be very close. The efforts we spend just to get reasonably accurate costumes illustrate that. Weather patterns change; years of special breeding, chemical fertilizers, and insecticides subtly but permanently alter raw materials; and in many cases, we'll simply never know everything about a physical historic environment.

But of much greater importance is the fact that no recipe exists from which to concoct the thoughts, values, and emotions of people who lived in the past. Even having steeped ourselves in the literature of the period, worn its clothes, and slept on its beds, we never shed 1977 perspectives and values. And from those perspectives and values, we judge and interpret the past. We simply cannot be another person and know his time as he knew it or value what he valued for his reasons.

Insisting that we can create and present a whole segment of the past denies the marvelous complexity of human beings. And whether visitors recognize it or not, that assumption deliberately and inevitably misleads them: we promise to recreate a whole or significant part of the past for them

Thomas Alva Edison's Laboratory, West Orange, N.J.

we then give them bits and pieces of it instead; and so we allow — even encourage — them to assume that they know most of that particular past when in fact they know only its pieces. The consequences of the deception include romanticizing, false stereotyping, and the easier manipulation of the past for its propaganda value.

Time past has, very simply, passed. And that would seem to be the first principle to convey to our visitors. The magic of history and its ability to provoke thought and learning come from the mystery, from the uncharted and intricate reaches of earlier thought and motive yet to be discovered. Far better then to provoke visitors to explore those reaches, using the historical remnants that we have, than to lull them into the pleasant notion that for one area or time period they have learned "the way it was."

Media versus Message

It is, after all, a useless, pointless debate. If it had any validity or necessity 10 or 20 years ago, it doesn't anymore. You see, arguing now over whether we need communicators *or* historians in a historical park presumes that we have to choose one or the other. Given the number of people who want either permanent or temporary jobs with us, we have the opportunity to hunt and choose and promote those genuinely skilled in both areas.

But since the argument continues and since one school of thought still insists that when a crunch comes, communication should be the primary skill sought, let us present our case for the necessity of hiring someone also trained as a historian.

What we value about honest-to-goodness historians isn't just their store of historical knowledge. Any number of people know a good bit about the past, but misrepresent or misconstrue or misuse that information. What we need are people who have a better than average command of historical information who can make thoughtful, well-founded decisions on when and how that information should be used. A degree in history doesn't guarantee that skill, but it increases the odds for its presence. In fact, though there are many ways to learn them, the skills and historical discernment we seek are the goals of the formal study of historiography.

The uses and necessity for that skill and judgment in a historical park are as subtle as they are important. Historical competence is needed:

- to recognize the difference between historical show biz and interpretation.
- to understand and articulate the park's historical theme.
- to judge the measure of historical accuracy *and* honesty in a book or a talk.
- to stalk elusive but needed historical information in obscure library corners and professional publications.
- to cull the toy cannons and key chains from interpretive sales shelves — and to know why that should be done.
- to describe for a park manager the significance of a historic house or fence or site to the park's theme.
- to set up logical research priorities.
- to stand up — at all times — with obvious expertise and integrity to a Service that does not always take history seriously — and to a profession that doesn't always find us professional.

Unfortunately, not all those decisions or situations are met by people with significant historical knowledge and discernment. And — in spite of that — parks keep operating — visitors keep coming — programs are still praised. But given the gamut of things liked by the American public, popularity is only a limited measure of success or good management.

You see, we hold the nation's most important historic sites — the places of greatest significance in its perception of its past. We don't, in point of fact, reach the American public as widely or as relentlessly as formal education or the entertainment and publishing industries (where some license with historical fact is forgiven). But — however corny it sounds, we touch visitors after they have come — almost as part of a pilgrimage — to see and know those surviving elements of their past that make their present more understandable, more hopeful.

If by ignorance or casualness or whim we distort visitors' comprehension of the past, "sell" them an easy version, perpetuate appealing myths, use the past as our soapbox, we've abused our responsibility and their trust. And whether they "find us out" today or tomorrow makes no difference in the magnitude of the offense.

Ms. Sherfy is a historian with the Cultural Resources Management Division of NPS.

PERSONALIZED HISTORICAL INTERPRETATION

One of the basic objectives of the National Park Service, as defined in the organic Act of 1916, was providing for the enjoyment of areas administered by the Service. In its broadest sense, this involves giving the visitor the background information, and interpreting that information so as to give him the fullest understanding, enjoyment, and appreciation of a given area. This objective has long been policy with the National Park Service, and I quote the following from Volume I of the National Park Service Administrative Manual:

> "Visitor understanding of scenic, scientific, and historic features is recognized as essential to full enjoyment and appreciation of areas of the System. Interpretive programs shall be developed and maintained to aid visitors to understand the significance of the area and to encourage them to view and enjoy its features. Appreciation of their preservation and the will to preserve the hsitoric, scientific, and aesthetic resources of National Park Service areas are enhanced by popular use and understanding."

One of our former directors, Newton B. Drury, has outlined the challenge in this objective:

"Most of the people who visit the national parks, whether they realize it or not, or whether they put it into words, are impelled to visit them because of the quest for a supreme experience. The gleam of glaciers on a mighty mountain; the shimmering beauty of a lake indescribably blue, resting in the crater of an extinct volcano; the thunder and mist of water falling over sculptured granite cliffs; the colorful chapter in the book of time revealed by the strata of mile-high canyon gashed by a rushing river; the sight of strange new plants and animals living in the natural adaptation to their environment and to each other; the roar of surf waging its eternal battle with the land; the silence that hangs over the ruins of the habitations of forgotten peoples; the lengthening shadows of the towering Sequoias - these and a thousand other vivid impression (and Mr. Drury might have added a parallel reference to "the quiet dignity of the room where the Declaration of Independence was adopted") are at the heart of the experience that national park visitors travel many miles to seek. All else that they do or that we do in the national parks is incidental. If we can remember this, we can remain true to our high calling as trustees for the great things of America."

The challenge, of course, lies in the fact that "experience" is not always "supreme experience" until some aid to understanding is supplied. The "supreme experience" is not always immediately obvious. The statement of a former Secretary of Interior, Franklin K. Lane, is pertinent:

> Like other quests for knowledge, an intelligent study of nature is greatly assisted by direction. Many persons who visit the parks are thoroughly responsive to their influences, but they lack the incentive born of knowledge to delve into a real understanding of things.

And here, of course, is the role of interpretation. And, certainly, if Mr. Lane's statement is true for the so-called "natural" areas, it is even more true for the historical areas. I suppose most everybody will get something out of a waterfall or a grand canyon - if not a really "supreme" something - but it is hard to get an empty field to come alive with the battle that took place thereon, and it's hard to get bricks and stone and mortar, such as those in Independence Hall, to give the average visitor - unless, of course, he is an architect, a real thrill. And not just the average person. I recall a comment in this connection from the great Irish writer, Sean O'Faolain:

> I confess that I never respond to places like the Colosseum, or Pompeii, or the Roman Forum, or the ruins of Ostia or Agrigento, unless my imagination, or some learned and sensitive friend, can first people them for me as they were when they were alive.

It is significant, I think, that even such an imaginative person as Sean O'Faolain finds the need for a sensitive interpreter at times. But, for the many people who don't have the imagination that O'Faolain certainly has, you, of course, are the "learned and sensitive friend" who peoples the scene - makes it come alive - makes it the "supreme experience" that it should be.

Now how do we do this - how do we go about giving Everyman the great "supreme experience" when he visits Everyman's historical area? How do we make him respond to more than the surface scene? And, of course, in this hour, I'm trying to think in personal terms - and forgetting all the non-personal interpretive facilities that are possible. It's certainly more than giving the facts, and Sean O'Faolain's comment on seeing the world through the eyes of a social scientist is pertinent. Speaking of some conscientious young American students visiting Europe in these post-war years and seeing the scene through the fashionable guise of Social Conscience, seeing "nothing at all but statistics, underemployment, bad finance, political chaos, moral turpitude, underproduction and the devil knows what other social abstraction," Mr. O'Faolain remarks that "The only possible thing to say to these sad young people is that the best way to see any city at all is 'after midnight, with an attractive young woman' - and then, by Heaven, I swear they would sit in the Colosseum reading a Senate report by the light of the moon." I am sure that in many of our Civil War battlefields (and at Independence, too, in a parallel sense) a more or less interested visitor has not only lost the thrill of it all, let alone the broader meaning, but has actually been scared away by a multiplicity of facts and military terms, complicated maneuvers, strange names, strange designation of units, and a great number of numbers, casualty figures, etc.

A story at this point will perhaps illustrate my thinking - if only in reverse. This is the story of the man who was discovered by his neighbor to be sprinkling the flowers in his garden with perfume and when his neighbor asked why, replied: "Oh, this is to scare the elephants away." His neighbor said, "For goodness sake! Why? The nearest elephants are ten thousand miles away." To this, his gardening friend replied: "Yes, I know. Effective, isn't it?" Now, while we must admit the danger of scaring the elephants away (no politics intended) by over-perfuming the facts, over interpreting the facts - at the same time, I feel that historians in the National Park Service perhaps more often have scared the elephants away by "over-facting" the perfume. It's certainly much more than fact that we must offer. We've got to relate happenings, one to another; the events in one building to the events in another building; the events in one time-period to the events in another time-period. We've got to make these events come alive in terms of the personalities that shaped the events and, somehow, we must relate the events of 200 years ago to the world today, and to ideas and historical personalities well known to people today.

Now, I dug down in my files the other day, and came up with some very perceptive comments on the problem as it has been seen to exist at

another area. Interestingly enough, these comments are by a seasonal Ranger-Historian, and this points up the larger aspects of your job. You bring to your job the freshness of approach, you who are in other activities during the winter season, that we "permanent personnel" inevitably lack, and we certainly are in need of your perceptive comments - based on your experience with the visitors here from day to day, re the shortcomings of our interpretive program, and what we need to do to give the people the "supreme experience" they're coming here for.

Here are the comments of seasonal Ranger-Historian Frederick Manzara after his tour of duty at the Castillo de San Marcos, that great fortress, symbol of forgotten Spanish power, preserved and interpreted by the Park Service in Saint Augustine today:

> The visitor should be made to identify himself with the early soldiers and settlers who built and occupied this fort. This would lead to a greater appreciation for the fort, and the work of the Spanish. Try to get the visitor to see things through the eyes of the early settlers. Such comments as, the English said, 'hitting these walls with a cannonball is like putting a knife into a piece of cheese.' Or, the Spanish governor said, 'The very name Florida strikes terror into the souls of the men.' (This is especially meaningful to a New Englander, brought up on a solid dose of English-based history; England was an "upstart" on these shores when Spain ruled Florida.)
>
> Make the visitor identify those early experiences with his own. 'People regarded Florida in those days much the same as we might regard Siberia today!' The soldier's pay was always late; it came from Havana, Cuba, and one time it was eight years late! Every one has had the experience of waiting for a pay check.
>
> In the courtyard, scatter a few Indians around, and a few Spanish soldiers (here "scatter a few Representatives" around!) Talk about the decoration. Imagine these walls if they were a brilliant white, but flat and featureless. It would be pretty dreary in here, wouldn't it? Then build in the window and door frames, the cornices, pilasters, pendants, etc. Good design. (They will see this as you make it meaningful!) Relieve the flat surfaces. It must have been hard to look at those white walls in the sunshine. They didn't have sunglasses in those days, the more shadow the better.

The people hearing mass from around the chapel door. Too crowded for them to get inside. Talk about the pottery, the pipes, the wine jugs and iron, oil, cloth, etc., from Spain. In short, the early part of the tour should get the visitor to build up to a unity between yesterday and today. Statistics are out of place in the early part of the tour.

Relate Florida to the rest of the world at that time . . . Here is the history lesson, the meat of the tour. After the people have been directed into feeling that they might have lived here in early days, we proceed to tell them why they would be in Florida in the first place and to what uses they would be put.

Relate the fort itself to its immediate environs. Point out the island, the swamps, the town, the outer defenses, etc. The specifications of the fort itself and the artillery. Here also we can do a bit of public relations work by pointing out the town and inviting people to go into St. Augustine and to get the rest of the story.

Inspire the people with an appreciation of how the country was built. Every stone placed in these walls by the Spanish slaves, the Indians, and the Spanish people was a building block in the structure of our nation. One of the few places where American settlers came into actual contact with the people from Spain. Now we can understand better the rich Spanish heritage manifest in our language, architecture, cookery, and many of our customs. Over half the people in the western hemisphere speak Spanish, not English.

Call attention to the work of the Park Service. We want to leave people with an appreciation of the work we are doing in preserving the scenic, scientific, and historic features of our country. One of the show windows of conservation.

Now how might we apply some of this interpretive philosophy to Independence, or some other area represented here. How do we see Independence through the eyes of the representatives here in 1776 and in 1787 and the years in between? How present the scene as they saw it? Of course, the restored Declaration Chamber helps considerably, and the buildings themselves, especially when fully restored. But let's think in terms of words. Sinclair did it pretty well, I think, with its ad featuring the restored Assembly Room. First the

catchy title "Visit the room where our liberty was born . . ." then the personalized text below the picture:

> You stand in this room at Independence Hall and see it as it was on that hot July morning 180 years ago when the Declaration of Independence was adopted. In your mind's eye you can see Ben Franklin ... John Adams down from Massachusetts ... and Tom Jefferson up from Virginia. This is where the States of America were born, and eleven years later became United. Here you can see the silver inkstand used in the Signing and the chair Washington sat in at the Constitutional Convention. In the nearby hallway you can put your hand on the Liberty Bell, the cracked symbol of a nation that didn't crack.

The last perhaps is a little "corny" - at least they left out Davey Crocket! (Though even this might be appreciated if you are addressing an audience of small children!)

Along this line: a couple more thoughts on interpreting the building itself. When we say "begun in 1732" - the date by itself is meaningless - why not identify this as the year George Washington was born 'way down in Virginia, and it was "way down in Virginia" in those days - or, identify this as just 50 years after William Penn sat foot on these shores.

Now, as the Castillo guide interpreted Florida and its meaning in the historical period, so let's not neglect the City of Philadelphia. Now that Philadelphia has become a train stop en route from New York to Washington and easily by-passed by turnpikes, I think it is good to remind people that to the representatives - or should we say the rebels and revolutionaries (that in itself is meaningful interpretation) - coming here in 1776, it was the largest city in the colonies and the principal city in the British Empire.

Again, what about identifying historical experiences with the visitors' own, or with events and historical figures well known to him? The First and Second United States Banks, for instance. I suggested last year that we might interpret these as the forerunners of our Federal Reserve System, presuming that the Federal Reserve System is sufficiently well known to most people. Present these as a first attempt at a central Government bank - the place where the Government deposited its funds, the place where it got money in a hurry. And, I think it's interesting in this day and age when banks are almost as numerous as filling stations, that there were only four other banks in the thirteen states in the year when the First Bank was chartered. I

wish we could glibly say "this is the place where your tax dollars would have come" but we can't - in terms of the majority of the people. There was no income tax. But even this might be a meaningful reminder. The whole money situation in the 1790's was something vastly different from today. There was a lot of English money around, for example - and much bartering of goods.

Library Hall - because of its special lending privileges to the members of Congress, I think this might be presented "popularly" as a forerunner to the Library of Congress, an institution fairly well-known to people today.

The Merchants' Exchange: present this as one of the early stock exchanges, and bring up a parallel again.

Congress Hall: compare the relative size of Congress then and now. Paint a picture, naming names of some of the more prominent members sitting on the rows and rows of seats. - Muhlenberg presiding as Speaker of the House - Tom Jefferson presiding as President of the Senate, one of his roles perhaps unknown to most people today.

And getting away from Independence - Hopewell Village: present the Blacksmith Shop as the Village Hardware Store - and, at Harpers Ferry, make the "Point" section of the town come alive by describing the hotels and other important structures centered here. Even throw in the John Brown man who was kept captive in the Wager House during the raid.

I am sure you, all of you, can add to the examples, and I certainly hope that you will think about this all of the time. We must constantly think of new ways to make facts come alive in terms of personalities that made the events, relating facts to people's lives today and to things that they know well, and we must always watch for the telling phrase, the quick summation, something to impress it on their minds - like a fire engine impresses itself on a busy city street - and, if possible, something to make them use their imagination - something even to make them think, and even read further on the subject.

Let's dwell a little on this matter of the telling phrase, a most important matter to the oral interpreter. I recall immediately some stimulating labels I saw at Gimbels a couple of years back when they opened a new suburban store, featuring a display of objects commemorating the local history roundabout. Over the usual collection of antiquarian household objects and implements, the eye-stopping - "Grandma's Handy Hardware Horrors." Instead of merely "Meatgrinder,

c. 1770" the following: "Meatgrinder, 1770. You put the meat in here - the knives go round and round - and the hamburger comes out here." Personalized, and - related to something the visitor knows - in this case, a popular song of some years back. Again, I think of those notable Sinclair Oil ads. Here's one on Mesa Verde - showing the cliff dwellings - "America's first apartment houses - today they belong to you." And I am sure the notable interpretive phrase "cheesebox on a raft" has fixed on all your minds from your schoolboy days a picture of John Ericson's Monitor. And getting back to "natural" examples: last week's New Yorker, in a stimulating article on an animal sightseeing safari in Africa, a reference to timid giraffes looking "over the tops of trees, keeping just their heads in sight, like schoolgirls peeping out of a dormitory window." And a reference to "Mongooses, running wildly into their holes into which they vanished abruptly, posting themselves like letters in a mailbox." And a reference to foxes: "Just their heads, with pinched faces and bright eyes, appeared out of their holes when we approached, and their enormous rounded ears turned slowly as they followed our progress, like a revolving radar antenna at an airport." Not necessarily, here, more meaningful - but at least they make the experience more memorable. Another one, on the train coming in this morning, an ad for CARE - a very tangible idea driven home with a personalized example: "You help harvest Freedom when you send tools through CARE." It's the sort of thing that Time and Life magazines do well all the time (despite the fact that the solid base of fact is sometimes lacking!) You'll recall, I'm sure, Life's fine series last year and year before on various phases of American life, in various time-periods. This afternoon, in the Gettysburg film, you'll see some more of the same thing. The juicy point of view - Northern troops in the battle came up from the South; Southern, from the North. Not necessarily important - but something to impress on the mind, perhaps arouse curiosity. The meaningful statistic: not just the figures, but what they mean in terms of the whole. Names of outfits - not numbers - the First Brooklyn - the only unit named for a city.

If you think interpretation all the time - and you should, in this business - it can get quite exciting. There are examples all around you. Last Friday's New York Times, for example, featured some excellent interpretation in an ad for TWA. While the intent, of course, was to sell TWA and its new Jet Stream plane, the comparison in picture and text to the Mayflower was the sort of thing that a good interpreter of the Mayflower itself might use; not just the dimension "92 feet" for the Mayflower, but the comparative statement "a little more than half the wing-span of the Jet Stream;" not just the statement "66 days (for the Mayflower) to cross the Atlantic" but the comparison "the TWA Jet Stream does it in less than half a day."

And yesterday morning, on the CBS radio program Invitation to Learning, a discussion of an early 19th Century wit, Sydney Smith, recalling Smith's allusion to the arrival at a fashionable dinner party of a social bore - again interpretation - "The cool of the evening is arriving!"

Let's remember - we are more than historians (and we're certainly more than just guides). We're poets part of the time (and I think of the interpretation and inspiration in Stephen Vincent Benet's John Brown's Body or Western Star). We are advertisers, selling history. We are dramatists. Above all, we are teachers. This is a teaching job you're in - one of the most important - one of the toughest. Tough, in terms of the varied audience that you have - all ages, all degrees of interest; you certainly have no captive audience as you do in a schoolroom. Tough, in terms of trying to be professional and soundly based on fact (we certainly must never forget that interpretation must not be mere guess or propaganda); yet, non-professional in delivery - like Walt Disney at his best. Toughest, of course, in terms of the dry-rot of routine that inevitably sets in as the days get hotter and the crowds get bigger, and the visitor "ideal" becomes a visitor "actuality" who's sure he's seen it all when he's seen the Liberty Bell, and everything else back home in Kalamazoo is much more interesting and, besides, he's hot and thirsty and he'd really rather look at the girls in shorts.

Now how do we master this last problem: the deadly routine - this is the real challenge in personalized historical interpretation. The largest part of the problem is, of course, you. And, aside from the periodic checkups that you will get from the permanent staff here - and from the Region - the best tool is constant and conscientious self-appraisal. And the first step is to remind yourself constantly that you're here, to begin with, because you believe in this work - you believe in history and its importance to Everyman - you have accepted the challenge of making it come alive to him. Along with this, keep the Appraisal Chart in the Administrative Manual constantly in mind - let's look at some of the questions therein ---

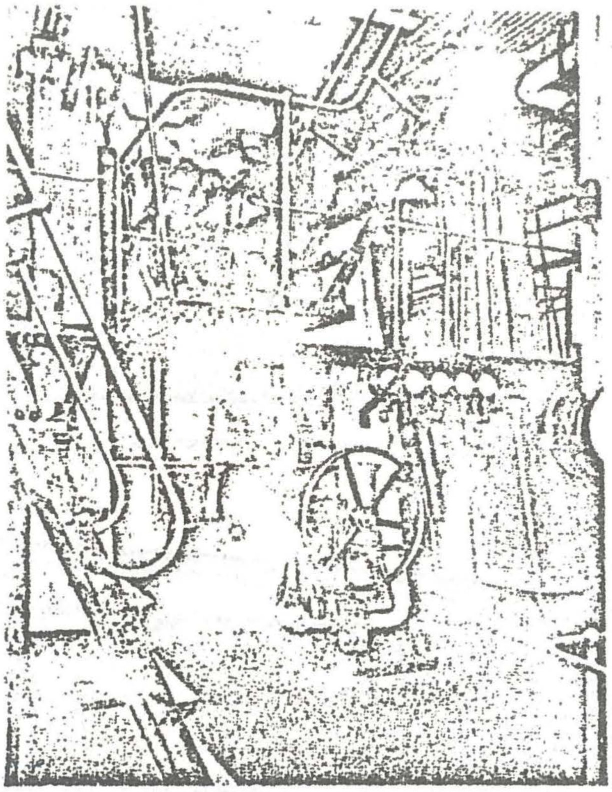
Self-appraisal is part of the solution. The other major tool is thinking in terms of the audience. Think of them, first of all, as stimuli - let's not look down our noses because they're not all historians - maybe historians don't have all the insights and answers, anyway. I used to find it stimulating to engage a visitor in conversation - point out something that he may have missed - find out what he's interested in, and find something along that line in the area. But, more than that, let's remember the "supreme experience" that they're coming here for. And remember that many of them are

coming here for the first time in their lives after years of thinking about and hearing about the Liberty Bell in Independence Hall. Many of them have traveled hundreds and thousands of miles to come here. Many of them will never come here again. We must not let them down ---

Gentlemen, we are a dedicated service, dedicated to the task of cherishing our historical heritage and making it come alive to the people who are its heirs. The National Park Service has a proud tradition of serving the people and the Man in the Uniform represents the Service ideal of meeting the people in person and personally helping that people to realize its heritage. We are in the business of enriching people's lives. Some of us feel that in the process, we enrich our own.

Excerpt from:
A Report on National Park Service Interpretation
By: William C. Everhart, Director, Harpers Ferry Center
March 1973

Pre-War Shipping Needs



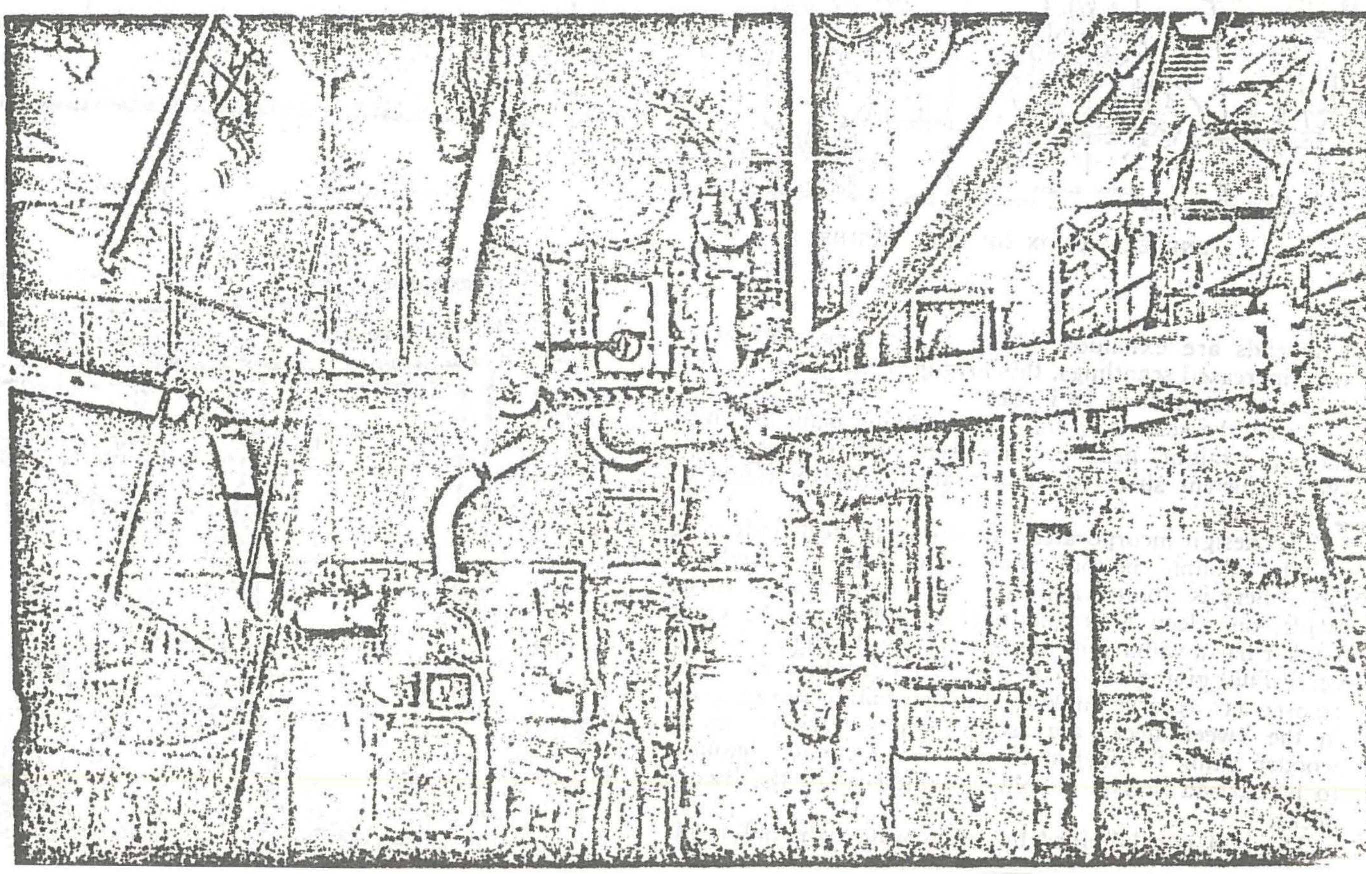
British Prototpye of the Liberty Ship

The first of a new type of standard cargo vessel, the *Empire Liberty*, has been completed by Joseph L. Thompson & Sons, Ltd., North Sands Shipbuilding Yard, Sunderland, who are building a series to Government and private account, according to *Shipbuilding and Shipping Record*, of London, from which this article is reprinted. The hull form and general design has been evolved by the builders, and is a parent form of vessels building for this country in America and in Canada.

Certain modifications, particularly with regard to welded construction, were made in the United States and Canada, however, to speed up production in view of the different facilities available. The *Empire Liberty* is substantially a sister ship of the *Ocean Vanguard*, built at Richmond, Cal., as far as the hull is concerned.

The vessels are designed to carry all types of cargo efficiently and economically, and at the same time to provide the maximum comfort and safety for the crew com-

VIEWS IN THE ENGINE ROOM OF THE BRITISH STANDARD CARGO VESSEL EMPIRE LIBERTY. ABOVE IS SHOWN THE MAIN ENGINE FROM THE CONTROL PLATFORM. BELOW IS SHOWN THE MAIN CONDENSER AND AUXILIARIES



patible with speedy production under present conditions. General particulars are:

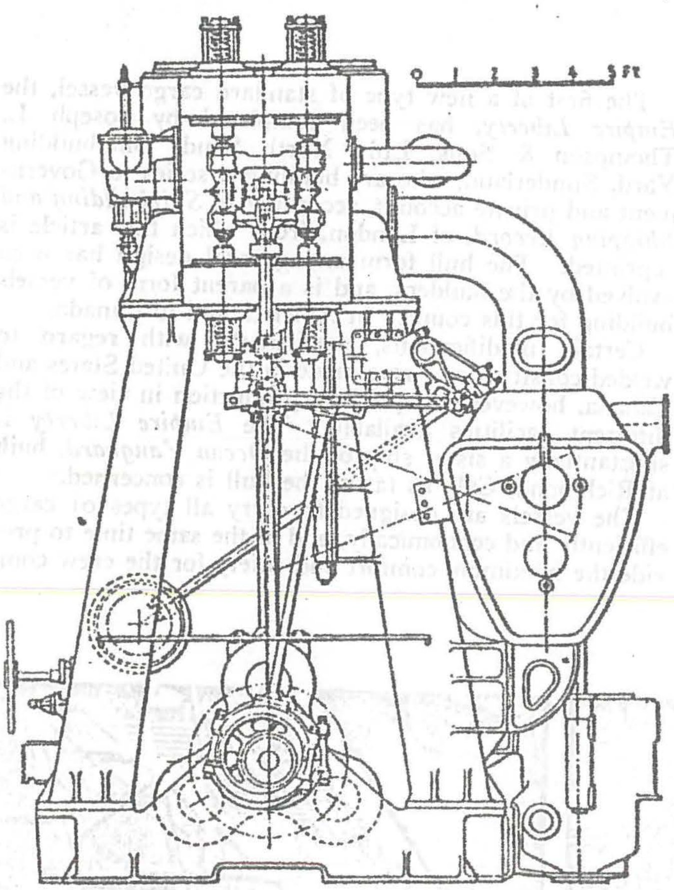
Length overall	441 feet 5 inches
Length between perpendiculars	416 feet
Breadth extreme	57 feet 2 inches
Depth molded to upper deck	37 feet 4 inches
Height of 'tween decks	8 feet 9 inches

Built under special survey of Lloyd's Register and to the latest Ministry of War Transport requirements, the vessels are intended for subsequent use as open shelter deckers with a draft of 25 feet 6 inches. For the present, however, the tonnage opening is closed and the main bulkheads are extended to the upper deck. Together with increased scantlings, this arrangement gives the vessel an extra draft of 18 inches.

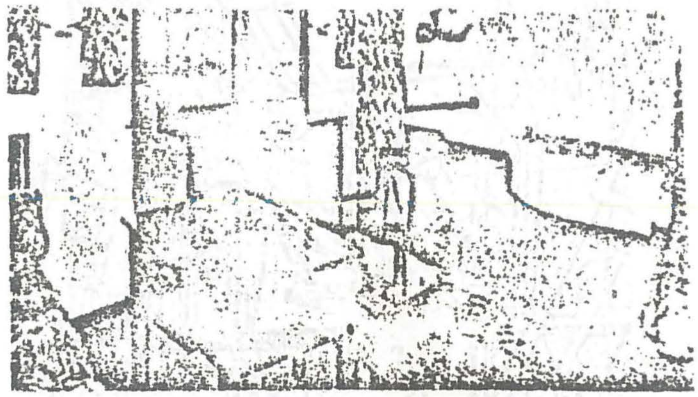
As will be seen from the accompanying plan, the ships have a straight, heavily raked stem and cruiser stern, with sufficient sheer to compensate for the omission of a forecastle.

The design incorporates two complete steel decks and cellular double bottom with solid floors throughout. Machinery is situated amidships, and there are five cargo holds, one deep tank and a cross bunker. The cross bunker has a watertight tunnel running through it on the centerline, giving access to No. 3 hold, which can thus be used as a reserve bunker. Further bunkers are carried in the 'tween decks abreast the engine casings, and a wooden trunk is fitted at No. 3 hatch to enable bunkers to be carried in No. 3 hold without coal in the 'tween decks.

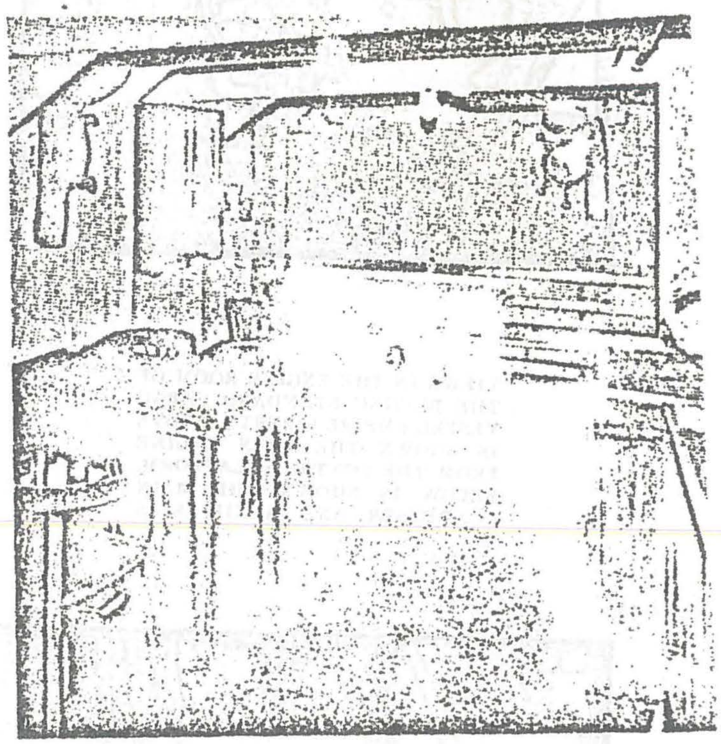
The hull is subdivided by seven watertight bulkheads

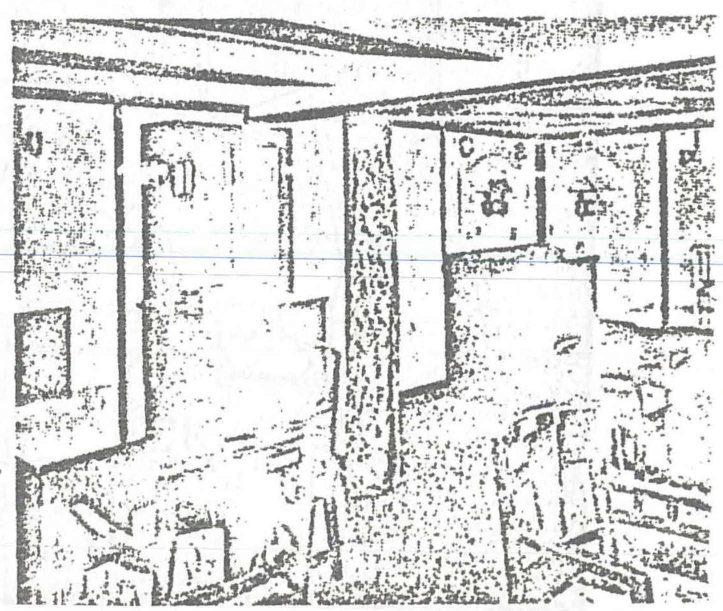


END ELEVATION OF MAIN ENGINE

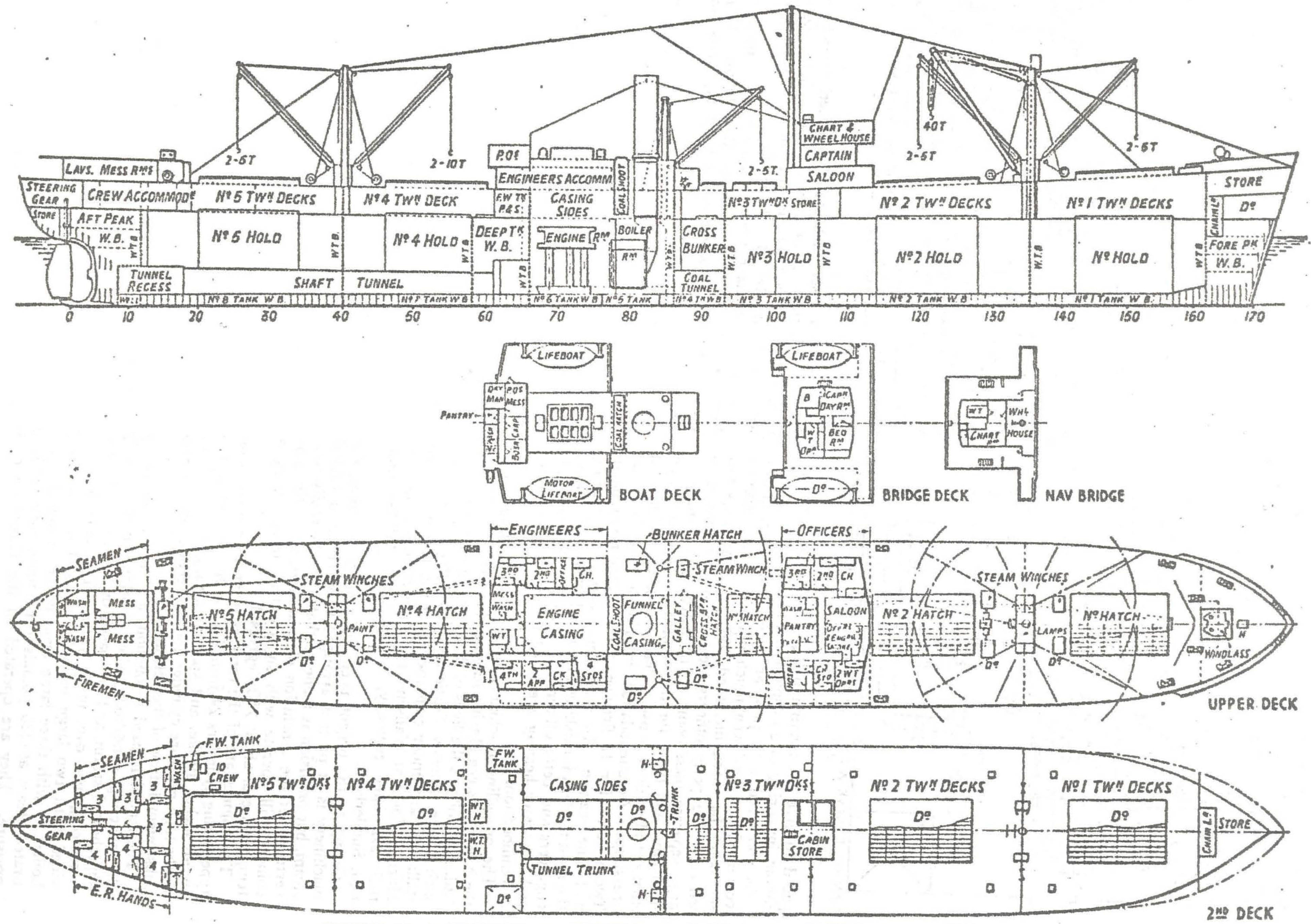


THE CAPTAIN'S STATEROOM

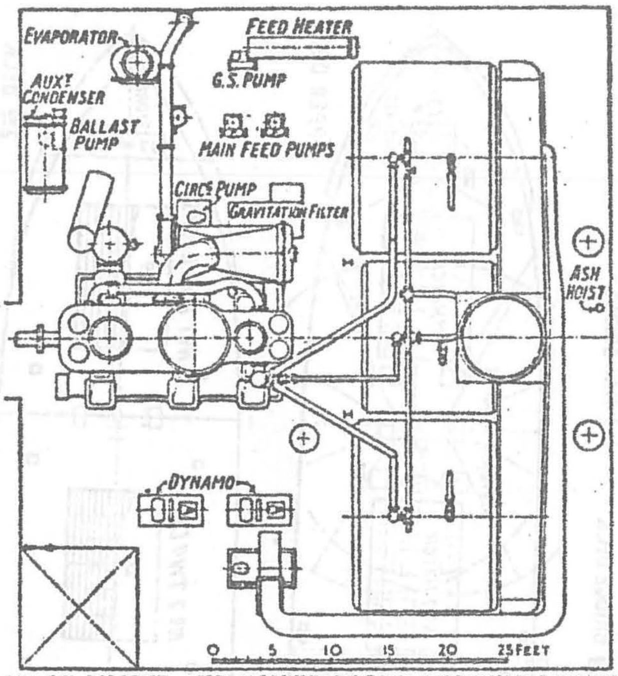




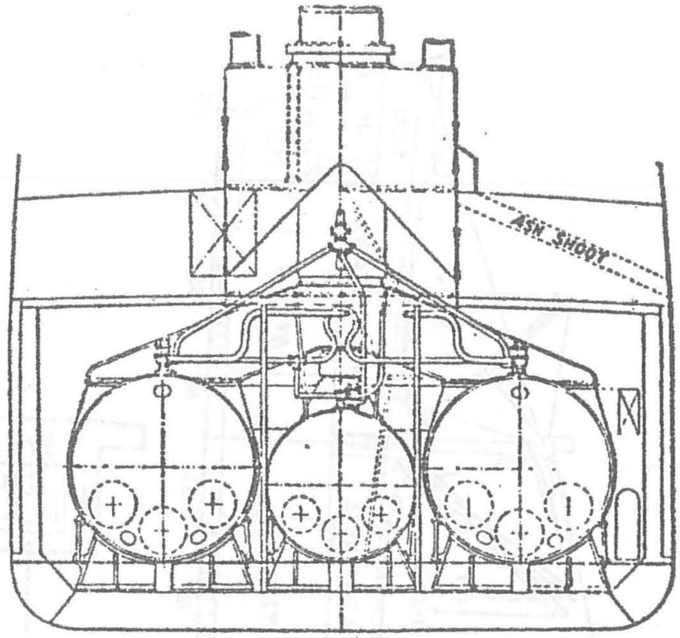
SEAMEN'S MESSROOM. (BELOW) OFFICERS' LOUNGE



GENERAL ARRANGEMENT PLANS OF BRITISH STANDARD CARGO VESSEL EMPIRE LIBERTY



PLAN OF ENGINE AND BOILER ROOMS SHOWING LOCATION OF AUXILIARIES



SECTION THROUGH BOILERS SHOWING AUXILIARY BOILER BETWEEN TWO MAIN BOILERS

spaced to give the maximum degree of safety possible without impairing cargo capacity and stowage.

As compared with pre-war cargo ships, the crew's accommodation has been much improved. The size of the rooms has been increased and the furnishings improved. The petty officers, seamen and firemen have large separate messrooms. The petty officers' mess is amidships, and those for the seamen and firemen in an enlarged after deck house. The furnishings include hot pressings. Accommodation is provided in the after 'tween decks for 12 firemen, three engine-room hands and nine seamen. In rooms amidships, incorporating the most modern furnishings, the usual number of officers, engineers and petty officers are berthed. Electric light and hot water heating are fitted throughout the crew's accommodation.

The propelling machinery is of the type designed by the North Eastern Marine Engineering Company (1938) Ltd., and follows the lines of that fitted in earlier vessels, such as the *Lowther Castle* and *Dorington Court*. Installations are under construction at the North Eastern Marine Works at Wallsend and Sunderland, and also by their associated company, George Clark (1938) Limited, Sunderland.

Owing to the urgent need for rapid production, the machinery is at present arranged to work on saturated steam, but provision is made so that it can be easily converted after the conclusion of hostilities, when the machinery will operate with superheated steam having a temperature of about 750 degrees F.

The engines are of the three-cylinder triple-expansion type having cylinders 24 inches, 39 inches, and 68 inches by 48 inches stroke, and space is arranged at the back of the high-pressure cylinder for the accommodation and subsequent fitting of the reheater.

The materials used throughout are such as to satisfy the exacting conditions when working under highly superheated steam, and are based on the company's experience gained over many years. The ships are provided with two large main boilers and one auxiliary boiler, or with three large main boilers, producing saturated steam at 220 pounds per square inch working pressure. They are operated on the Howden forced-draft system.

The holds are served by ten 5-ton steel derricks and 7-inch by 12-inch steam winches, and a heavy derrick is provided at the after side of the foremast together with two 8-inch by 14-inch winches.

Lifesaving appliances to the latest regulations include four lifeboats, all the same size, thus tending to give even distribution, housed in Crescent type mechanical davits.

Construction of the Liberty Ships

THE LIBERTY SHIPS

In the United States of America up to the years 1919-20 some 2,500 merchant ships, built both of wood and of steel, and totalling nearly 6½ million deadweight tons, were constructed under the impetus of First World War conditions, but thereafter the American shipbuilding industry declined rapidly.

In the fifteen years from 1922 until 1937, only two dry cargo ships were constructed in American shipyards, although a few tankers were also built and twenty-nine passenger-cargo liners were constructed under the subsidy provisions of the 1928 Merchant Marine Act.

However, the lost art of shipbuilding was somewhat revived by the Merchant Marine Act of 1936, for this provided for the formation of a maritime commission and a policy of which three salient features were:

a) ......that it is necessary for national defence and for the development of both domestic and overseas commerce to have a new, modern and efficient merchant marine......

b) ......that such fleet should be capable of serving as naval or military auxiliary in time of war or national emergency......

c) ......that the ships should be constructed in America and owned and operated under the US flag......

Therefore, disregarding any previous methods of aiding the failing shipping industry, the Act frankly authorised construction differential and operating differential subsidies, so that American builders and operators found themselves on a competitive parity with foreign-flag ships. The maintenance of a building nucleus and of operating capacity for emergency use could not be met in any other way, for it was generally agreed that the (then) cost of constructing a cargo vessel in an American shipyard was, on the average, twice as much as paid by foreign competitors and that American operating costs were fifty per cent more.

When the United States Maritime Commission was established in 1936, there were only ten shipyards and forty-six slipways in the United States capable of building ocean-going ships more than 400 ft long, and half of these yards were then engaged on naval construction. In 1937 a ten-year peace-time programme was begun by the commission, this calling for the construction of fifty ships a year to rehabilitate an ageing merchant fleet whose average remaining economic life was less than five years. It proposed to replace these over-age ships with high-speed tankers and with three standard types of freighter, the latter being fast units powered by geared turbines and designed for economical operation.

The original maritime commission programme was indeed an ambitious one. Contracts were 'let' for the first hundred ships and the five hundred ships planned were expected to place a total of just under four million gross tons of new shipping on the high seas.

At that time the commission itself determined which services should be maintained between American and foreign ports, and its survey of trade routes indicated the types of vessel best suited to each. All the varied requirements were taken into account by the commission's design teams and the result was the early C1, C2 and C3 standard type ships. It was perhaps fortunate that large scale planning and its execution had always been a dominant feature of the American way of life, for this far-sightedness in instituting quantity production in shipbuilding was

of immense importance to the speed with which the nation was able to turn to mass prefabrication during the following critical years.

In its original concept the shipbuilding programme made history with its attempt at 'standardisation for individualists', for although it produced three standard types of ship, there still remained the necessity of adapting them to the needs of various owners and operators. These individual needs showed, not only in trade requirements but also in the fact that, for example, some owners still demanded a tall circular funnel whilst others insisted upon a squat pear-shaped structure.

By the year 1939, even before the European declaration of war, and whilst the old-established American shipbuilding yards could muster only the bare nucleus of a skilled labour force totalling no more than 20,000, the original building schedule was doubled. In August of 1940 it doubled yet again, to two hundred ships a year, by which time the commission's building programme was distributed between nineteen different yards.

These standard ships proved to be excellent turbine vessels with no equal. In 1940 one averaged nearly 17 knots on a transatlantic voyage. Another completed in November of the same year was the commission's first all-welded vessel. It showed that this technique and modern building ideas could save some 600 tons weight in any one ship.

However, American shipyards were still not geared to a war programme, and even during the following year, when the commission was five years old, some 92 per cent of the 1,422 US-flag ocean-going ships of over 2,000 tons were more than twenty years old. Of a similar vintage, too, were 225 American government-owned ships, the majority of which had been laid up 'in reserve' since the First World War.

In 1940 Britain alone was fighting the enemy. In the Atlantic the menace of the submarine was increasing and in the tally of destruction one hundred and fifty ships, totalling one million tons, had already been sent to the bottom in the first nine months of conflict. The U-boats were sinking ships at a faster rate than British yards could build them.

Clearly the menace had to be overcome and the balance restored.

So it came about that in September of 1940 a British Merchant Shipbuilding Mission headed by a representative from the Sunderland shipbuilding yard of J.L. Thompson & Sons left for the USA with the sole motive of ordering ships to be built there. Ships were needed urgently if the Battle of the Atlantic was to be won, and America with her safety and neutrality was the obvious supplier.

Already Britain had been too slow, for during the early days of the war hundreds of the laid-up American ships could have been acquired. Yet only 178,000 deadweight tons had been purchased from these First World War-built stocks – and only then after urging by Winston Churchill 'to delay no longer but to make the best possible bargain'.

The plans which the mission took to America were based on the Thompson-designed and Thompson-built *Dorington Court* of 1939. But these plans were less complicated and the ship not so beamy as the prototype, but nevertheless had the same classical hull lines as the ship which had previously impressed the British Admiralty by its ability to drive some 10,000 tons at 11 knots on a modest 2,500 ihp. These same plans were, in fact, used in the United Kingdom as the basis of the first British 'emergency' war-built ship, the *Empire Liberty* of 7,157 grt.

In New York waited Admiral Emory Scott Land, Chairman of the United States Maritime Commission. He was well aware of the fate facing Britain and considered it pointless that American energy should be diverted to build 'slow' ships for a country facing disaster. His view was that the commission should disassociate itself from these 'simple, slow' ships by permitting Britain to purchase their planned sixty ships outright.

This they did, but the mission found no working berths were available and quickly concluded that the ships would either have to be welded, and in new shipyards, or not built at all.

And so, for the two thirty-ship 'Ocean' contracts, new yards had to be specially laid out by a syndicate formed by Todd Shipyards Inc and Henry J. Kaiser's group of West coast construction and engineering firms known as Six Services Incorporated.

Other spheres of ship construction in America were not keeping pace with the upsurge of hull construction at that time and it soon became obvious that the propelling machinery needed for all their C (cargo) type ships was

just not available on a large scale. At the same time the rapidity with which the war was spreading pointed to a need for even greater tonnage.

In January 1941 a change of policy came with the announcement that a new shipbuilding programme would be started. It was realised that slick, sophisticated vessels must await better times and that British thoughts of quantity rather than quality – 'ships built by the mile and chopped off by the yard' – was the only possible answer in the circumstances.

But traditional diehards still favoured commission designs and argued against the British drawings. They declared that the new 'Ocean' type hull was not suited to mass production and would not compete in speed or equipment, and in an attempt to justify their point they even cited a World War I design as a promising plan, and suggested its use instead. This was the 'Los Angeles' class of vessel, of which some 238 had been built at the end of the war. It was of the same deadweight as the planned British ships but on slightly smaller dimensions, with triple expansion engines, water tube boilers and a speed of 10½ knots. At first glance it was, perhaps, just what was needed, but the plans would have needed very much revision for the application of welding. Also, this type of ship had suffered from known defects, the main ones being a weak skeg and an unrigid engine foundation. They also had heavy and expensive boilers, the engine builder no longer existed and no plans of the machinery had survived.

Time was of vital importance. Therefore the choice had to be made from existing designs, with slight modifications to meet special needs, for it was obvious that to adapt any design other than the known British ones would bring further long delays in re-designing and testing. Some shipyards graciously conceded that with the backing of long experience, British ideas were basically sound. Also, it was estimated that the fabrication required for these ships in mass production would result in only a slight increase in man-hours over a USMC design.

With a change of heart Admiral Land then made the final decision – to copy the 'slow' British ships.

Later he was to boast of the rapid deliveries of the sixty 'Oceans' and on 15 October 1941 Mrs Emory Land named the very first of them as *Ocean Vanguard.*

In a February broadcast President Roosevelt announced this emergency 200 ship programme without disguising his contempt for their appearance in describing them as 'dreadful-looking objects'.

Immediately they were dubbed 'ugly ducklings', whilst one newspaper's headlines declared that 'Sea Scows with Blunt Bows will carry the tools to Britain' – this being a variation on the theme of a famous British wartime slogan.

Thus an emergency type of cargo steamer, based on British designs and which could be produced on a mass production basis by assembly line methods was adopted. But the use of derisive names was not the way in which to proclaim a new ship type, and Admiral Land, in an attempt to refute the bad image, gave the first reference to these ships as a 'Liberty Fleet' and nominated September 27, 1941, to be 'Liberty Fleet Day'.

After this there was great public acclamation of the ships and they were publicised by the press throughout the country. But by this time they had become 'Liberty Ships' and their new class name was adopted throughout America.

The Liberty ship is the type of vessel which, in its hundreds, is accredited with saving not only Britain, not only the Allied cause, but the whole world from disaster -- for there was a grave fear that the war might be lost simply because Allied lifelines were stretched almost beyond limit owing to an insufficient number of ships.

The advent of America's Liberty ships was an undoubted relief at a time of dire distress. But this was perhaps no more than an unintentional and yet welcome reciprocal act which offset the years of 1940-41 when in Europe Britain remained undaunted against the might of the powerful and almost all-conquering German war machine, and stood virtually alone until late in 1941 when further acts of Axis aggression, culminating in the Japanese attack on Pearl Harbour, brought the United States of America into the conflict.

THE LIBERTY SHIP PROGRAMME

'The Liberty ship was an emergency product primarily for war use. It was classed with other materials of war; it was produced to be expendable if necessary -- and if expended then it had served its purpose'.

But as subsequent events were to prove, it was neither a mistake nor a poor ship as its early critics averred, and it was in fact good enough to be regarded as something more than an expendable instrument of war.

In its early days the Liberty was still regarded as a doomed type and its emergency character was impressed upon Congress in a Committee Report of January 1941 which supported the special appropriation for construction, but described the Liberty as 'a five-year vessel' and added:

'It is slow and seaworthy and has the longevity of a modern steel ship, but for the demands of normal commerce in foreign trade it could not compete in speed, equipment and general serviceability with up-to-date cargo vessels. The design is the best that can be devised for an emergency product to be quickly, cheaply and simply built. They will be constructed for the emergency and whether they have any utility afterward will have to be determined then. The coastal trade may offer some possibilities in that direction.'

Built in the USA, Liberty ships were the same type as the 'Oceans' ordered by Britain from American yards and the ship 'which began it all' – the *Empire Liberty* completed in the United Kingdom in October 1941.

The Liberty ships, then, stemmed from a British design, and the basis on which the United States commenced their mammoth programme was greatly assisted by the 1940 visit of the British mission to that country, for the early mass production of 'Oceans' set the pattern for the whole of the subsequent American shipbuilding effort.

This effort consisted of a series of defined programmes or definite 'waves of expansion'. The first was that provided by the 1941 approval of nine new emergency yards – two of which were building the sixty 'Ocean' ships and the others the two hundred US-owned ships ordered on 3 January 1941.

The second followed in April of the same year, when Congress authorised the transfer of merchant ships and other forms of aid to Britain under a lease lend formula.

The remainder of 1941 saw the third expansion wave embrace not only major and minor types of ships, but also, accelerate the earlier programmes. The end of the year and Japanese attack in the Pacific opened the 'flood' of two even greater waves. The first of these two was, of course, the stupendous changes made as America entered the war, and the second one was the raising of the 1942-43 objective to a total of 24 million tons of shipping.

Many changes distinguished the Liberties from the British prototype, and in fact no British ships had been built exactly to the plans used as the basis of the new vessels. The plans brought from England had been quickly modified in the interest of fast construction, to facilitate welding and to avoid, as far as possible, the need for furnaced plates by giving a slight curvature to the whole ship. This eliminated many of the turns and twists and double curves at bow and stern and left only two plates, on each side of the forefoot, which still required furnacing and power-pressing.

Some of the larger changes, previously agreed by the commission, were embodied in the specifications, but others originated in the drawing of the working plans. Some, seemingly insignificant, turned out to be quite important – as for instance, the unstrengthened square hatch corners and the sheerstrake cut in the way of the accommodation ladder. Such features as these were the starting point of many subsequent hull fractures, but at the time of their approval there had been no experience of welded ships in wartime conditions of heavy deck loads, unusual stresses and poor ballasting.

One major hull alteration was to re-arrange the superstructure so as to accommodate the whole of the crew in a single midship house. This was not only the customary maritime commission choice but was considered safer for Atlantic voyages. It also economised on piping, heating and outfitting. The only other major modification was to eliminate deck-camber between the hatches and to have a straight camber from the sides of the hatches to the sides of the ship.

Minor alterations included steel decks instead of wooden ones, although wood was retained for furniture and fittings, some bulkheads, ceilings, linings and hatch covers, the latter so that they might, if necessary, act as life rafts. In addition the ships were given bulwarks instead of chain rails, bridge plating instead of canvas wind dodgers, access ladders to holds without the need to remove the hatches, an after steering position, searchlights, domestic refrigerators and running water in the cabins.

A major improvement was the new style contra rudder which increased speed and assisted manoeuvrability, but nevertheless the high standards previously set by the USMC were cut some three dozen times, so reducing the ships to severely austere ones. They were planned to have bar davits instead of mechanical ones, although before the first completion mechanical ones were again specified. The ships were not given radio direction finders, fire detection equipment, emergency diesel generators or lifeboat radios, and although it was known that degaussing equip-

ment affected standard magnetic compasses, they were not fitted with gyro compasses – although each vessel had a wired gyro room as an integral part of the design.

A shortage of steel necessitated the reduction of the anchor chains from the original 300 fathoms to 240. Later this was again reduced to 210 fathoms, being divided so that one anchor had 135 fathoms and the other 75. Even so, many vessels still went to sea with only one anchor.

At times of such steel shortages wood was regarded as a good substitute for some items formerly made of steel, but by 1943, when lumber became scarce and the shortage of steel had eased, the substitution was reversed. This regular conserving and changing of materials is well shown in the problem of suppiying cargo booms to the Liberty ships. The original plans specified 5-ton booms only, but increasing sizes of heavy cargoes made it necessary to put in some fifteen – then thirty and finally fifty-ton booms at Nos 2 and 4 hatches. The demand for steel booms was further increased by the failure of the wooden ones which were fitted to the first 122 Liberties built on the West coast. And so the introduction of a new cold-rolling process for tapered tubes produced a new-style, lightweight boom and nearly 17,000 of these, giving a total saving of over 2,300 tons of steel, were ordered subsequent to July 1942.

A paradoxical aspect of the shipbuilding situation was that whilst British-built vessels of the time were customarily being fitted with steam reciprocating engines and Scotch boilers, engineers in the USA had to learn the technique over again when similar machinery, designed in Britain by the North Eastern Marine Engineering Co Ltd. was installed in the 'Ocean' vessels.

Nevertheless, this same engine design was chosen for the Liberty ship programme, the only alteration being to turn the ships into oil burners and to install water-tube boilers instead of the Scotch ones. These engine units were of 2,500 ihp and standardisation was also applied here, so allowing not only the main engines but also the boilers, pumps and deck equipment to be fabricated by many different yards and factories with facilities readily available. Later new plants were constructed and existing ones expanded, so enabling, for instance, the Joshua Hendy Iron Works at Sunnyvale, California, to raise its output from ten to thirty engine sets per month, thus becoming the largest producer.

All engine parts were so completely interchangeable that during the following war years a few American-made machinery sets, temporarily surplus to immediate requirement, were fitted into some wartime Canadian-built ships (also using similar machinery), whilst in return certain Canadian-built machinery powered some of the Liberties.

The change to oil fuel also brought about other modifications. Fuel tanks replaced fixed ballast in the double bottoms and two deep tanks were added to No 1 hold for water ballast forward. The single midship house and the elimination of coal bunkers permitted the use of masts instead of king posts, and allowed the lengthening of No 3 hold.

The resultant ships from all the plans and modifications were 11-knot vessels with a standard tonnage of 7,176 gross tons (further technical details will be found under the respective sections) and these basic vessels were finally classified by the commission as the EC2-S-C1 type, this being a variation of the originally intended EC2-S-D1 design, such unused design being a simplified hull form of the type finally adopted.

This system of ship classification was based on three groups of letters and numbers. The first group – prefixed by E for emergency – indicated a type of vessel (ie cargo, tanker, passenger, etc) and its approximate waterline length (based on a scale wherein 1 represented less than 400 feet; 2 represented from 400 to 450 feet, etc). The second group indicated the type of machinery and number of propellers (ie S equalled steam; ST equalled steam, twin screw; M equalled motor, etc), and the third group indicated the particular design of the ship-type and its modifications.

There was later variation to the classification as differing Liberty types evolved. It may be noted here that the three-group system was adopted by the USA for certain of its wartime tonnage; prior to this a two-group classification applied.

Therefore, with Liberty ships, the first group of letters, EC2, indicated that the vessels would be about the same size as the normal C2 vessels but different from them in being of the emergency type.

The original style of nomenclature adopted for the emergency vessels was the bestowing upon them the names of persons notable in the history and culture of America. Later names included those of merchant seamen, military

and naval nurses and other eminent Americans from all walks of life – although there were some notable exceptions to this.

Organised under the jurisdiction of the USMC, two new shipyards were created early in 1941. These were the Oregon Shipbuilding Corporation and the Bethlehem-Fairfield Shipyard Inc, and in January 1941 both were awarded contracts for the construction of shipyard facilities. As a result eight slipways (later increased to eleven) were built at Portland, Oregon, and thirteen (later sixteen) at Baltimore. On March 14 of the same year both yards contracted to produce Liberty cargo ships, and these and all subsequent Liberty ships from all yards were given a 'Maritime Commission, Emergency' hull number as well as the builder's yard number.

In the event, a total of 3,148 Liberty MCE numbers were allocated between different shipyards, but a total of only 2,710 ships were constructed, the balance of the numbers being either not used or the contracts cancelled.

The story here of one batch of cancelled contracts serves as the forerunner to the brief yard histories shown under their respective headings.

To meet the February 1942 directive from the President of the USA, the new Higgins shipyard at New Orleans was authorised. Of revolutionary design, it planned to have four assembly lines each a mile long and was to contain a total of 44 ships in various pre-launch constructional stages at any one time. Along with this grandiose scheme was the vision of New Orleans becoming the future shipbuilding centre of the world, and to set the pace the first five vessels of the 200-ship order were to be delivered in 1942 and the remainder during 1943.

But mounting costs gave rise to scepticism, for the original estimate of 25 million dollars had, within five months, risen to 59 million. Soon it was obvious there would be no 1942 output and that the yard would be the last to come into production. At the same time a shortage of steel was a limiting factor in shipbuilding, but whereas in a normal yard any delay would affect only 'a few' ships, shortages in this huge yard would have stopped work on all the many ships on the lines.

And so the yard was not completed and the 200-ship contract was cancelled. At the time of the cancellation no MCE hull numbers had been allocated to the vessels of this contract.

Elsewhere, rapid shipyard construction enabled Bethlehem-Fairfield to lay the first keel (of the *Patrick Henry*) on April 30th, whilst the Oregon Shipbuilding Corporation laid two, the *Star of Oregon* and the *Meriwether Lewis* on May 19th. Only eight months after the agreement to create these yards, each had launched its first ship and three months later, on December 30th and 31st respectively, each had delivered its first complete product.

Thus both the Pacific coast and the Atlantic coast participated in contributing to the war effort the first of the emergency cargo ships.

In all, during 1941, a total of nine new emergency shipyards were approved. From their original total of 65 ways it was expected to produce 260 ships (the first 200 Liberties and the British 'Oceans') within two years. Of these nine yards, two, at Baltimore and Wilmington, were in the hands of old established shipbuilders; one at New Orleans was in the hands of a Great Lakes builder and another, at Mobile, was managed by a large ship repair company. The remaining five yards, at Houston, Los Angeles and Portland, plus the two for British 'Oceans', were under the control of a Todd Shipyards/Bath IronWorks/Henry J. Kaiser group.

In the year 1775 Patrick Henry, the person, had cried 'Give me liberty or give me death'. The ship *Patrick Henry*, the first of the many Liberties, was launched on 27 September 1941, and on that day, called 'Liberty Fleet Day', and still some ten weeks before Pearl Harbour, there was presented a dazzling array of outstanding shipbuilding achievements.

Throughout the nation fourteen ships were launched with many notable persons speaking at the various ceremonies, and capped by a message from the President, directed especially to shipyard workers.

His speech was more than just praise of the occasion and an appeal for 'more ships and still more ships', for it contained the first reference to his determination to set aside the laws which prevented American merchant ships being armed and prevented their entering the combat zones. 'Each new ship', he said, 'strikes a blow at the menace to the nation and for the liberty of the free peoples of the world .... we propose that these ships shall sail the seas as intended, and to the best of our ability shall protect them from torpedoes, bombs or shells'.

Up to the time when the Neutrality Law was finally amended on 13 November 1941, none of America's merchant ships were armed. Under the amendment arming began, but at first progress was very slow. Not long

after, the declaration of war temporarily brought about a critical situation, for enemy submarines roamed the Atlantic, the East coast and the Gulf of Mexico almost at will and ships were soon to be sunk in alarming numbers before the matter was resolved.

After the delivery of the *Patrick Henry* the shipbuilding programme swung into full scale production. Eighteen shipyards were ultimately involved and almost unbelievable records were made and broken again and again. A study of the production times at the two previously-named yards produce some interesting figures for their first year of operation.

At Fairfield the first vessel (yard No 2001) was on the slip for 150 days and spent ninety-five days fitting-out, a total building time of 245 days.

Yard No 2002 took five days longer to complete; twenty ships later the total was down to 120 days and at the fifty-ship mark was down to fifty-eight days, this being fifty-one days on slip and seven fitting out. This new yard maintained an average of 'more than' five launchings per month during their first year, and in August 1942 created a world record when twelve vessels (yard Nos 2044-2050 and 2056-2060) went down the ways. In the previous month another record was established at the yard, with twelve completions.

In the case of the Portland yard the average first-year monthly launchings was 'nearly' six ships, reaching ten vessels during August 1942 and attaining a peak for completions in May of the same year when thirteen vessels were handed to the maritime commission. Here, the first vessel (yard No 171) was completed in 227 days but the next vessel (yard No 170) took twenty-seven more days to finish. Up to August 1942 the fastest time for a completion was forty-seven days (yard No 236), this being a radical change from the 257 days spent over one of the first ships (yard No 173).

However, late in September 1942 a special assembly effort resulted in a ship (yard No 581) being launched after only ten days and delivered some five days later.

Also during this same month the American shipyards reached the promised goal of three ships a day, by delivering ninety-three new ships into service. These vessels totalled more than one million deadweight tons, and for the record it may be noted that sixty-seven were Liberties, seven were 'Oceans' for British account, seven were large tankers, ten were of the C1, C2 and C3 types and the remaining two were a passenger-cargo vessel and an ore carrier.

By October 1942 the American shipbuilding capacity had expanded more than 600 per cent over the 1937 figure, and there were more than sixty shipyards producing various types of ships for the maritime commission. Since February of the previous year, when President Roosevelt ordered the emergency programme, the commission had authorised and financed the construction of twenty new shipyards and also laid claim to some closed-down yards. A capacity of ninety-seven ways was authorised before 'Liberty Fleet Day' and a subsequent sixty-eight ways made a total of 165 ways in these twenty yards.

A further forty-five ways were added to existing yards, and this total of 210 slips, plus later expansion, permitted a schedule of more than 2,300 merchant vessels for production in 1942 and 1943 (of which more than 1,500 were Liberty ships) totalling in all some 27 million deadweight tons. From this total the 1942 figure is quite significant, for although some 11 million tons (including 8 million from America) of new merchantmen was constructed by the Allies, the Axis destruction of shipping was so widespread that there was a nett loss for the year of about one million tons.

Another event during 1942 – on February 7th – was the formation of the War Shipping Administration, set up by the President as a war emergency measure to control all American shipping and to take over, for the duration of the war, the vessels of the maritime commission. After the war, in September 1946, this administration was liquidated and all vessels reverted to the jurisdiction of the commission.

Initially the 1944 target of some 2,000 merchantmen included only about 800 Liberties, for by this time the trend of military requirement was for a greater proportion of faster ships – those which could run free of convoy and move quickly to fighting fronts and also those which would be more effective in post-war times. By August of this year the commission had 251 slipways at its disposal, of which 103 were being used by the USN.

In fact, by August of the previous year one yard, North Carolina, had already completed its last Liberty; had launched its first C type ship less than three weeks afterward and had laid its first 'Victory' ship keel two months later.

Also, for future invasion plans the Bethlehem and the new Kaiser yards built tank landing ships and escort aircraft carriers (respectively) on slipways designed for Liberties. All these and other similar factors account for subsequent breaks in some sequences of Liberty yard numbers, both in these and in other shipyards.

Nevertheless, as Liberty shipbuilding progressed still more records were made and broken with great rapidity. A special effort had launched one in only ten days and the response to this produced the world record of the assembly and launch of the *Robert E. Peary* in only four days, fifteen and a half hours after keel laying.

Henry J. Kaiser was undoubted 'king' of mass production shipbuilding in America. Previously his group had linked with Todd Shipyards and the combine controlled five of the nine new yards from 1941. In the early part of this year the importance of forthcoming Kaiser management was not foreseen, for in shipbuilding the Todd name still overshadowed that of its partner. Subsequently Kaiser formed new yards of his own, acquired full ownership of the west coast yards he managed and sold to Todd his interest in the Todd-managed yards elsewhere.

But in 1940 this one-time owner of a New York photographic shop was still unknown in Britain, was unknown in shipbuilding, but was well known in America as the head of a construction group. His business interests had changed, firstly to the sand and gravel one, and thence had progressed into giant construction work. Notable feats to his credit included a series of dams – Hoover, Grand Coulee and Bonneville, and also the famous San Francisco Bridge which crosses the bay to the city of Oakland.

Kaiser was a man with immense drive, ability and initiative and was always willing to tackle 'impossible' tasks – indeed he could readily have coined the boast 'that the impossible is performed at once, miracles take a little longer'. Fortunately he had been willing 'to have a go' at the impossible task of constructing for Britain not only the sixty 'Ocean' ships on the solid rock of Portland, Maine, and the mudflats of Richmond, California, but had even brought in his own experts from the dam projects to help construct the new yards as well. Henry Kaiser was in the forefront of knowledge when the calculated risk of welding the emergency ships was taken.

At the peak of his 'reign' he controlled many of the major prefabricating yards, and it was said that he did not build ships but simply produced them. Probably only one in every 200 of his workers had ever seen a shipyard before, and 25 per cent had not even seen the sea! Many of his executives had not previously faced ship construction problems, and so they approached their new tasks – as indeed the whole organisation did – with open minds and no preconceived theories about conventional shipbuilding, but with the determination to get things done quickly, efficiently and with the minimum wastage of time, materials and labour.

These men were hustlers within a group which considered no task to be too difficult.

The Kaiser theories on mass production – and the fact that he spoke of 'front' and 'back' ends of a product which just happened to be the shape of a ship – caused America's traditional shipbuilders much amusement, but nevertheless he fulfilled all his 'promises' on shipbuilding. One promise was the determination that California, a land of movies, fruit and sunshine, should have its own steel plant and so avoid the frequent frustrations of awaiting steel supplies from the eastern part of the States.

An enquiry regarding the source of a potential iron ore supply brought the retort 'we'll prospect for it out here' – and it was found, too, in Utah......

Praise for his methods; acclaim for his achievements; amazement at ever-reducing delivery times, stirring accounts of success constantly made big news:

......'Henry Kaiser, who knew nothing of shipbuilding only two years ago, has just completed a ship in 47 days......'

......'a Liberty ship launched on the West coast was not only the 75th from this Kaiser yard in a year, but was launched only ten days after keel-laying......'

......'Kaiser advertises for a 'mere' 20,000 additional shipyard workers......'

Speed of construction is typified by the amusing 'Kaiser' story of the lady asked to launch a ship, and who arrived at the launching platform to be confronted by the usual bottle of champagne but no ship. Asking if a mistake had been made, she was advised to start swinging the bottle immediately, for not only the stem but indeed the whole ship would arrive at any moment!

These, and many other similar facts, stories and anecdotes inspired both sides of the Atlantic to even greater efforts over the fateful years.

Many wartime Kaiser shipyards were laid out on quite revolutionary principles, as was one of the two which

built the 'Ocean' ships, and whether in the sun of the State of California or the rain of the State of Washington, the efficiency was the same, for the yards were merely assembly plants for the 30,000-plus components produced en-masse in thousands of factories in more than thirty-two States which went into the making of a Liberty ship.

Some yards, for instance, had no slipways, the substitute being docks or basins. Ships were not launched; the docks were just flooded and the ships floated out. Every basin was spanned by giant cranes and the whole group was inter-connected by platforms at various levels.

Notable items missing from these revolutionary yards were ordinary shipyard tools and equipment.

Component parts were consumed virtually non-stop and it was quite commonplace to see, say, complete deck-houses erected upside-down on a wheeled trolley and then inverted and placed in position. Also it became quite customary to see stock-piles of double-bottom sections with all piping already installed, waiting to be dropped complete on to the keels. Other stock would include complete stern-frame assemblies and even complete bow units. For yet other yards fabrication was carried out in plant which, pre-war, produced bridges, structural steel-work and the like.

It has been suggested that the influence of welding made all such fabrication possible, but really this statement is no more than partial truth. It was really the speed of required deliveries which made welding necessary, and special portable welding plants which welded continuously whilst moving at walking pace were evolved for this purpose.

In general the Liberty hull was all-welded, although builders were given considerable latitude and between them produced several combinations such as rivetted frames, rivetted seams and in some cases rivetted deckhouses. Some yards, as for example the Delta Shipbuilding Co, elected to weld 100 per cent, for, being a new yard with mostly inexperienced personnel, they were able to establish the principle before their production commenced. With such welding they were able to eliminate both rivetting facilities and the necessary personnel. Later on, when rivetted gunwale bars and deck straps were fitted to the ships a rivetting section was established for this purpose.

As the shipbuilding programme continued, numbers of improvements were made to the Liberty design, most of which were for the purpose of giving the vessels greater protection against enemy action, but which included the addition of quick-release lifeboat gear, so giving a better chance to any crew forced to abandon ship. Shipyards took alterations in their stride, but, as was only to be expected with such a vast mass-production programme, there were also some problems to be overcome. Undoubtedly the major one was some disquieting structural failures which occurred in these welded ships, whilst propeller-dropping also occurred quite frequently. The latter problem arose simply because of the mass building of the ships. Previously a ship's propeller was fitted tightly to the shaft without the use of a gland sealing ring; but such a tight fit was not readily achieved during mass production, and when not achieved corrosion often resulted as steel and bronze came together.

In the meantime the critics of welding had continued in their determination to discredit and undermine the nation's shipbuilding achievements. The climax to their campaign came early in 1944, when their growing fears for safety were publicly directed at the Portland, Oregon yard, builders of the *John Straub* – which had broken in two and sunk in Arctic waters. Previously, there had been a number of similar Liberty casualties (see the first vessel listed in this book), including two in quick succession in the December of the previous year – the *John P. Gaines* (qv) and the *Valery Chkalov*, (ex *Alexander Baranof*, qv). This latter vessel was, at the time, flying the Russian flag under lease lend terms, and the Soviet authorities were fortunate in that their demands brought them an immediate replacement vessel from the Oregon shipyard.

However, loss statistics showed that during the previous two years of 1942 and 1943 a heavy loss of life had in fact occurred due to the breaking in two of welded ships in Arctic waters. It was said that 12½ per cent of all Liberties had weld defects, nearly 10 per cent had already developed cracks and that one ship in every thirty had suffered major fractures.

Doubtless the statements that 'when they crack it sounds like an explosion'; 'the cracks run like ladders in a stocking' and 'the ships stand on a wave and the ends shake like jelly' were all founded on some fact, and perhaps even accounted for the early reports that the *John Straub* was 'sunk by explosion'.

Some alarm spread through the nation when, in Alaska, yet another Liberty (loaded with troops) split open whilst still moored alongside. Immediately the use of ten more Liberties, already converted into troopships, was vetoed until further investigations had been made.

It was found that plating fractures occurred from notches in the steel, defective welds or square hatch corners, and were being accentuated by severe Arctic cold which turned ordinary mild steel brittle, like glass, and ships did in fact 'go bang and fall apart'.

During the winter of 1943-44 Kaiser-built vessels were the most affected by this cracking, but then many of his yards were near to the North Pacific and a large proportion of their output was, naturally, assigned to these cold waters.

As a preventive measure the 'crack-arresting' practice was introduced. This was in the form of special reinforcement to the hatches, strengthening with rivetted gunwale bars and deck straps, and the use of a tougher steel where stresses were concentrated. In addition the troopship conversions had additional girders fitted to their inner bottoms.

As designed, Liberties were 'stiff' ships; ie, stable but liable to roll violently in a seaway, especially when empty – which could lead to damage. (The alternative 'tender' ship would roll less but be less stable). Therefore, to take the stiffness out of Liberties in ballast, the practice grew during wartime (and subsequently) of putting a solid ballast in the 'tween decks to counteract the great weight down below.

This ballasting ensured a better performance, but under certain circumstances and conditions it was at the expense of stability and this, in fact, did lead to actual loss and to several near-losses. Further reference to this and referring particularly to ballasting in the United Kingdom, will be found under the heading of 'The Sam Ships'.

Many of the basic type of Liberty cargo ship were transferred to, or completed for America's allies; some 200 came to Britain under the terms of lease lend and these were all given the British style of nomenclature, having the prefix 'Sam' to their names.

Some fifty ships, mostly Oregon and Permanente built, were turned over to the Soviet Union on similar terms. But whereas the British lease lenders were all 'technically' returned to United States ownership, most of the Soviet ones subsequently suffered from a form of permanent detention, for that nation politely ignored the American request for the return of their ships, and most of those loaned some 25 years ago still trade under the Russian flag.

They are, of course, still technically on loan and yet have long-since been written off by the USA as a bad debt. At the current age and condition of the average Liberty, their return is perhaps not now so very desirable, for trading vessels of this vintage are no longer in demand and reserve fleet status would only briefly postpone a final trip to a shipbreakers yard.

Two major re-designs of the standard Liberty ship produced the Liberty tanker and the Liberty collier, whilst extensive conversion produced a further two (similar) types – these being transports for aircraft and for army tanks.

Further details of all these will be found under their respective sections.

In addition, other modifications fitted many vessels for use as troopships, hospital and training ships and a considerable number of others were taken by the Navy and Army and were extensively altered into other special naval and military auxiliaries. An example of a Navy conversion is the batch converted into floating repair shops (ARG), for these were given facilities for both major and minor repair and each had accommodation for a crew of 600 plus further accommodation for the crews of the ships being repaired.

Often the upperworks and superstructures of the converted and modified ships bore little likeness to the original vessel, although the standard Liberty hull always remained an easy point of recognition.

The letter Z used as a prefix to a design type was intended to indicate that the vessel was a modification of a standard type ship to make it a special purpose ship. The Z designation was not consistently used for this purpose, however.

The Z3-EC2-S-C1 designation refers to Liberty ships converted to training ships for use at marine schools.

THE BUILDING PROGRAM

On Saturday, 27 September 1941, a new ship was ready for launching at the Bethlehem-Fairfield shipyard in Baltimore, Maryland. Her hull and superstructure were bright with fresh gray paint. Gay bunting draped her bow. Signal pennants fluttered from stem to stern in the warm fall breeze.

Thousands of spectators filled every vantage point around the launching area. Roads leading to the yard were lined with automobiles. The Baltimore and Ohio Railroad had run a special train from Washington with government officials and representatives of industry, labor, and the press. Extra streetcars had been put into service for the occasion.

Obviously, this was not the launching of just another ship. That day, 27 September, had been designated Liberty Fleet Day, and throughout the United States the Maritime Commission had scheduled 14 ship launchings in what was hailed as "the largest launching of merchant vessels that this country has seen since World War I."

For a homely, unromantic freighter, the launching of the first of the Liberty fleet had attracted a distinguished party. Rear Admiral Emory S. Land, the

principal speaker and head of the United States Maritime Commission, shared the ceremonial platform with government officials, representatives of the yard, and Mrs. Henry A. Wallace, wife of the vice-president of the United States, who would christen the ship.

In his speech, Admiral Land reported that the nation's emergency ship-construction program was many months ahead of schedule—that instead of two Liberty ships being delivered in 1941, as originally planned, at least 20 ships would be completed and in service by the end of the year.

"As long as America faces the crisis and challenge of Hitlerism," he concluded, "there will be a continuous and increasing flow of ships from this and other American plants." Then there was a loud crack as a cutting torch burned through the steel "anchor" plating just below the speaker's platform. The bow of the ship moved ever so slightly. An official handed the bottle of champagne to Mrs. Wallace and shouted "Smash it!" She swung the bottle against the bow and, as it burst into foam, said, "I christen thee *Patrick Henry*."

The Baltimore Civic Band struck up the "Star Spangled Banner" as the first of all the Libertys slid into the waters of the Patapsco and a flock of homing pigeons darted from a cage beneath the speaker's platform and circled above the cranes and scaffolds. Then they headed homeward to the Naval Air Station at Lakehurst, New Jersey. They carried messages to be transmitted to President Roosevelt in Washington, informing him that the *Patrick Henry* had been launched.

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Patrick Henry was only the first of 312 ships to be turned out by the Bethlehem yard alone. And they were only a fraction of the Libertys that were eventually to slide down American shipways in the most stupendous building program the world will probably ever see. No one, whether in Rome, Berlin, Tokyo, or Washington, could anticipate that *Patrick Henry* was to be followed by more than 2700 sister ships that would carry American troops and their fighting gear around the world.

Even as the *Patrick Henry* was towed to a fitting-out dock, shipyard workers prepared to lay the keel of another Liberty ship. And thus it was to be until the end of the war, as a score of shipyards launched an armada of ships so vast that the Axis powers would be overwhelmed by a flood of men, guns, and machines.

The *Patrick Henry* slid down the launching ways none too soon. Although

Pearl Harbor was still three months in the future, the United States, for all intents and purposes, was already in the shooting war. On 4 September, the USS *Greer*, a World War I destroyer, was attacked by a German submarine 175 miles southwest of Iceland. Within another month the destroyer *Kearny* was torpedoed near Iceland and the destroyer *Reuben James* was sunk by a German U-boat. Actually, the U. S. Navy became involved in the Battle of the Atlantic on 17 September 1941, when five U. S. destroyers were assigned to escort convoy HX150, bound from Halifax for the British Isles. This naval assignment short of an official declaration of war was occasioned by Britain's desperate need for convoy protection. Merchant ship losses were reaching the point where Hitler's hope of winning the war with submarines, of strangling Britain by severing its ocean supply lines showed every sign of success.

The decision to augment American merchant ship tonnage and to accelerate construction of new ships had been made during a period when German submarines and surface raiders were sinking more than 500,000 tons of Allied shipping each month in the North Atlantic alone.

The Allies needed ships by the hundreds to replace such losses and increase the flow of supplies to Britain and Russia. The Libertys, slow but capacious, were the ships. With the launching of the *Patrick Henry*, they were on their way.

Patrick Henry went into service just 23 days after the attack on Pearl Harbor, the interval between launching and commissioning being the time required for installation of machinery and the myriad other aspects of making her ready for sea.

Chief Engineer Leonard Whaley took the ship out of the shipyard, stayed with her all during the war, and finally left her at the end of her twelfth voyage in April, 1946. "She ran like a charm," he said. "I hated to get off and turn her over to someone else. She was a great ship—the greatest."

The *Patrick Henry's* master on the first few voyages was Captain Richard G. Ellis. Captain Erling Olmstead, who succeeded him, said, "I am proud to be the master of the first Liberty. No one picked a soft trip for this veteran. She made all the tough runs and always delivered her cargo. I, among thousands of men who have sailed these ships, am in a position to know best the wonderful job they have done. I know their ruggedness and untiring character. I know how tough they are and well able to hold their own in any weather."

The *Patrick Henry* backed her master up all the way. On a voyage to the Middle East the ship steamed 7,633 miles at an average speed of 11.6 knots and

delivered 11,028 tons of cargo. Her fuel-oil consumption was a nominal 193 to 194 barrels a day.

Liberty ships soon became the workhorses of World War II, more famous perhaps than the sleek American clipper ships that preceded them by about 100 years. During the war, and afterward, there was hardly a port anywhere in the world, from Chicago to Chittagong, where the Libertys were not a familiar sight. No other single type of merchant vessel has ever sailed the seas in such vast numbers.

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What, exactly, was a Liberty ship? Designated an EC2 in the Maritime Commission's nomenclature of vessel types (E for Emergency, C for Cargo, 2 for large capacity), the *Patrick Henry* differed very little in any respect from her hundreds of sister ships. The Liberty was the product of a standardized design, and each ship was a blueprint copy of the others, except that each varied by a few tons in gross tonnage.

The Liberty ship design was adapted from that of an old and time-proven British tramp ship. Any doubts about the origin of the design were dispelled by a statement from Admiral Land, printed in the U. S. Naval Institute *Proceedings* for December, 1960:

> "The contract plans and many others for the Liberty ship were obtained from the British. Detailed plans were prepared by Gibbs & Cox, a firm of naval architects in New York, and by the U.S. Maritime Commission. The design came from Sunderland and originated in 1879. Various claims for the Liberty ship design have been made by U. S. Citizens, even a gold medal was awarded for one, but they were erroneous and no award was deserved. The Liberty was based on an old tramp ship design."

Plans for the Liberty designs were shown to President Roosevelt in 1941, when Admiral Land spread out some blue prints on the President's desk in the White House. Roosevelt was a lover of ships and had an eye for a ship, but it must not have been in good focus that day. As the President leafed through the prints, Land recalled, "He came to the profile sheet, backed away from it and said, 'Admiral, I think this ship will do us very well. She'll carry a good load. She isn't much to look at, though, is she? A real ugly duckling.' "

The press picked up this comment and from then on that's how Libertys were

known. Later, in 1943, after Admiral Land so described them, the "ugly ducklings" became "the expendables." They were much maligned and misunderstood by a misinformed public. Headline-hunting critics added to this misinformation. But the *Patrick Henry* and the hundreds of ships that followed justified the fondest hopes of those who designed and built them, confounded their critics, and helped to defeat the Axis powers.

The standard Liberty was 441 feet 6 inches over all, with a beam of 56 feet, 10¾ inches and a loaded draft of 27 feet, 9¼ inches. The deadweight tonnage was 10,920, gross tonnage about 7,500, and displacement tonnage 14,257. Libertys carried 9,146 tons of cargo with a full load of fuel. It was quite common, however, for them to haul more, and most of them sailed with holds filled and a deckload of planes, tanks, crated aircraft, trucks, heavy machinery, or locomotives, holding them down to their Plimsoll marks or deeper with a 10,000-ton payload.

The ship had five holds; three forward of the engine spaces and two aft. Cargo capacity was equal to that of 300 railroad freight cars. A Liberty could carry 2,840 jeeps, 440 light tanks, 230 million rounds of rifle ammunition, or 3,440,000 C-rations.

The Maritime Commission specified a reciprocating steam engine for power, partly because of its simplicity of operation and ease of procurement, and partly because turbines and complicated electrical equipment were slated for warship use.

These three-cylinder "up-and-down" engines were fed by two oil-burning boilers and produced 2,500 horsepower and a speed of 11 knots with the ship fully loaded, although many engineers were able to get 11.5 knots when boilers and hull were clean and the machinery was in good order.

Officers had private rooms, but crewmen slept two or three to a room. The ships provided showers, a luxury to many prewar seamen who were accustomed to the traditional bathtub for merchant seamen, a bucket.

Officers ate in the "saloon" on the main deck in the forward part of the midships house. Crewmen and the armed guard had separate dining areas and were served by messboys in separate sittings, as there was not enough room for all hands to eat together. A galley on the main deck adjacent to the crew's mess was usually fitted with oil-burning ranges, but some had coal ranges.

Some Armed Guard men lived amidships, six or eight to a room, one room on the starboard side and the other on the port side adjacent to the officer's saloon. About half of the complement bunked in the most uncomfortable part of the ship,

the after deckhouse. The stern moved violently in rough weather, tossing, bucking, and shaking every time the propeller came out of water in a heavy sea. This was one reason why many a gunner experienced chronic seasickness and had to be transferred.

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The Liberty ship program was actually preceded in 1940–41 by the construction of 60 *Ocean*-class vessels for the British Ministry of War Transport, based on plans originally used at Newcastle-on-Tyne in 1879. The simple design was well adapted for emergency production in large numbers. The first of these ships, the *Ocean Vanguard*, was the first all-American-made vessel for the British. She was also the first ship built by the new Todd-California yard (a Henry Kaiser operation) in Richmond, California. The ship was launched just seven months after ground was broken for construction of that shipyard. Sixty such ships were built for the British, by Kaiser, half at the Portland, Maine yard, which had been constructed for this purpose, and half at the Richmond yard. The American-built British Libertys were similar to the U. S. type, but with a different silhouette because of the split deckhouse, which followed the general design in British tramp ships. They burned coal and had Scotch boilers. Crew accommodations were not as good as in the American ships. Chain rails were used on deck instead of bulwarks, and there were other minor differences. Construction of these ships accelerated the decision of the Maritime Commission to build an emergency-type freighter. The Commission, even as late as 1941, had little relish for such vessels, believing they would be a detriment to American shipping in later years and holding to the idea that the standard C-types should be constructed in larger numbers. America's fast drift into the shooting war and huge Allied shipping losses combined to focus thinking on the emergency-ship concept.

The EC2 design was selected because of its simplicity and adaptability to mass-production methods. Mass production of shipping had first been used successfully in the U. S. during the emergency ship program of World War I, when America startled the maritime world by using prefabrication techniques to turn out ships of standardized design. The best known ships were called "Hog Islanders," so named because they were constructed at the 900-acre Hog Island emergency shipyard in Philadelphia. Hog Island had 50 shipways and was the first yard ever built especially for mass production of ships. It launched its first ship, the SS *Quistconck*, on 5 August 1918, and the last of 122 ships on 29 January 1921.

None of them were ready before World War I ended, but many served the merchant marine for over 20 years afterward. The Navy had several—stores ships *Capella, Sirius, Spica, Vega;* transports *Chaumont, St. Mihiel, Chateau Thierry;* and tenders *Wright* and *Argonne*—when World War II began.

Standard "Hogs" measured 380 feet overall, with a 54-foot beam, 24-foot draft, and 2,500-horsepower steam turbines. Some were 58 feet longer and had 6,000 horsepower. The American merchant fleet, between the two world wars, found them handy in size, fairly fast, and economical. Many of them served through World War II; 58 were sunk by submarines or were casualties of the war through other types of battle action, groundings, or accidents. "Hogs" were known as good seaboats, giving a comfortable ride in stormy weather. The 448-foot "Hogs"—*Wright, Chaumont, Argonne, St. Mihiel,* and *Chateau Thierry*—were strange-looking ships that appeared, when viewed broadside, to be sagging at the bow and stern. They also, at a quick glance, appeared to be going both ways at once. This was the result of being designed without sheer, deadrise, or tumble home to simplify fabrication and to speed construction.

Besides the legendary "Hog Islanders," the World War I emergency program produced everything from turbine-powered cargo freighters to tankers, tugs, and barges. In fact, one World War I U. S. Shipping Board emergency type of freighter, the *Los Angeles*-class, was seriously considered for reproduction as the World War II Liberty ship. This 11-knot vessel with triple-expansion steam engines and watertube boilers had construction features suitable for speedy production and economical steel consumption. The British design won out for various reasons, one of the most important being that the firm of Gibbs and Cox, New York naval architects, was already well along in preparing detailed plans from the British design.

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The Maritime Commission never considered the Liberty ship as an ugly duckling. "The Liberty ship," said a press release of 1941, "will present a trim, seagoing appearance. Riding low in the water, with its long, slender prow and its simple, straight-lined superstructure, it will knife its way through the waves as gracefully as any vessel afloat." Liberty ships at sea fulfilled the prediction. They were neither ugly nor ungainly.

As the German submarine campaign became more effective, and business and government in the United States voiced dismay over mounting ship losses, hun-

dreds of suggestions, plans, and proposals for new ships or shipping schemes were pressed on the President and members of Congress. All of them eventually were referred to Admiral Land, many with powerful sponsorship from politicians and influential industrialists.

Among plans for replacing ship losses was one for building a large fleet of sailing ships, similar to the government-sponsored sailing ship construction of World War I, which had been a great waste of time, money and materials. The proponents wanted to build hundreds of two- and three-masted schooners with gasoline or diesel engines to carry coastal and Caribbean commerce. The idea was discarded as impractical, but not before it had received some important support. One Caribbean nation even applied for a million-dollar loan to build its own fleet of such ships.

Still more impractical, as seen in the perspective of later years, but vociferously advocated at the time by President Roosevelt and others, was a small, freight-carrying vessel called the Beaver or Sea Otter. Designed for propulsion by gasoline engines, this craft lay so low in the water that it looked more like a Great Lakes whaleback or a submarine. Its low freeboard and wave-top silhouette, claimed the backers, were advantages, presenting a small target for a submarine.

Proponents of this ship could hardly have had practical experience in a North Atlantic gale; nor could they have envisioned the long trips that wartime freighters would make to distant fighting fronts. And how these little ships could have transported locomotives or Sherman tanks would have been an interesting problem, too. Nevertheless, in October of 1942 the Commission was pressured into awarding a contract for a ship of this type. It became a subject of controversy in Administration and shipbuilding circles for more than a year; opponents of the craft saying it was a waste of money and proponents claiming it would be an answer to the submarine menace.

The theory behind the Sea Otter was to provide a type of ship that could be produced in such a number that the enemy couldn't keep up with them. They would carry a small crew—perhaps 20 or so—and 1,500 tons of cargo at a speed of 12 knots. The argument seemed so logical that the Senate started an inquiry into why the Maritime Commission didn't jump "whole hog" into the project.

Whatever type of ship was to be built, it would have been impossible without the rejuvenation program provided by the Merchant Marine Act of 1936. Without the building stimulus of that legislation, construction of the vast Liberty fleet might well have been impossible and would, even at best, have been greatly

delayed. Had this building program not been well underway by 1941, the nation's shipyard capacity would not have been able to handle the emergency shipbuilding efforts. The Act of 1936 set up the U. S. Maritime Commission, which replaced the old Shipping Board, and asserted a bold new maritime policy for the United States.

The preamble to this legislation, often called the Magna Carta of the modern U. S. Merchant Marine, stated:

> It is necessary for the national defense and the development of its foreign and domestic commerce that the United States shall have a Merchant Marine (a) sufficient to carry its domestic waterborn commerce and a substantial portion of the export and import foreign commerce of the United States and to provide shipping service on all routes essential for maintaining the flow of such domestic and foreign waterborn commerce at all times; (b) capable of serving as a Naval and Military Auxiliary in the time of war or national emergency (c) owned and operated under the United States flag by citizens of the United States in so far as may be practicable, and (d) composed of the best equipped, safest and most suitable types of vessels. constructed in the United States and manned with a trained and efficient citizen personnel. It is hereby declared to be a policy of the United States to foster and encourage the development of such a Merchant Marine!.

The first ship built under this new policy was launched on 22 April 1939. She was the freighter *Donald McKay*, named for the famous Boston designer and builder of clipper ships, and was the first of 20 high-speed steel cargo ships built on the well-known C2 design. The *McKay* and ships of her class were in prime demand as high-speed transports when the war started. The C2s were 435 feet long, measured 8,875 deadweight tons, and were turbine-powered for a speed of 15½ knots fully loaded.

Increasing tension in Europe in the summer of 1939 indicated a need for accelerating the shipbuilding program. On 14 September 1939, the SS *Sea Arrow*, the first oceangoing merchant ship to be launched on the Pacific Coast since World War I, slid down the ways of the Moore Dry Dock Company in Oakland, California. She was a 492-foot, 16½-knot freighter of the Maritime Commission's C3 design. Other C3 hulls followed.

In 1937 there were only ten shipyards in the entire country capable of turning out a vessel the size of a Liberty. Under the Maritime Commission's shipyard

construction program, the number of yards was increased to 40 by 1941. These yards had a total of 275 shipways capable of handling vessels of 400 or more feet in length. By VE Day (7 May 1945) the United States had more than 50 active shipyards, of which 18 built the Libertys.

In his speech at the launching of the *Patrick Henry*, Admiral Land predicted that experience gained with that ship, plus the *Star of Oregon*, *John C. Fremont*, and several others nearing completion, showed that the EC2 could be delivered in from four and a half to six months, compared with ten to twelve months for the famous "Hog Islanders" and other emergency types built during World War I. Land at that time had no idea how American mass-production ingenuity would meet and exceed these expectations.

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The Oregon Shipbuilding Corporation built a shipyard out of a swamp and compiled an outstanding record on its eleven shipways. The keel of its first ship, the *Star of Oregon*, was laid 19 May 1941. This ship was launched on 27 September and delivered on 31 December, a total of 253 days. Building time at this yard was rapidly reduced: the tenth ship was delivered in 154 days, the nineteenth in 86 days, the thirteenth in 73 days. The *Thomas Bailey Aldrich*, from keel laying to delivery, was completed in a total of 46 days.

The Kaiser yard took 197 days to build and deliver its first Liberty ship in Richmond, California. By August, 1942, Kaiser's Portland, Oregon, yard launched and delivered the *Pierre S. DuPont* in 31 days. His yard at Richmond, California completed the *Joseph N. Teal* in 16 days.

The keel for Liberty ship hull number 440 was laid at Richmond on 8 November 1942. The completed vessel, containing more than 250,000 different items, was completed in four days and 15 hours and was launched on 12 November as the *Robert E. Peary*. In 24 hours the hull had taken shape and 1,450 tons of steel —all prefabricated sections—and the 135-ton engine were in place. By the end of the second day, the upper deck was finished. On the third day, deckhouses, masts, and deck equipment were installed. Final welding, wiring, and painting was completed on the fourth day, and the *Robert E. Peary* was ready for launching. She went into operation three days later.

To work this shipbuilding miracle, construction time was cut from months to weeks by rigid uniformity in design, specifications and procurement. Sixty-one percent of the ship was prefabricated, with more than 152,000 feet of weld performed on the assembly line. A total of 97 prefabricated sections were trucked

from the prefab plant to the ways. The hull was assembled in huge 250-ton "chunks" swung into place with all interior fittings—even mirrors, bunk ladders, portholes, washbasins, and radiators—already installed. Seventeen banks of welding machines were used on each side of the hull. As the magazine, *Ships*, of the Shipbuilders Council of America explained it, the EC2 was "standardized to the last small gasket, to the final door hinge." Libertys were turned out like automobiles, and so fast that sometimes painters were still at work on them when they slid down the ways.

Building hulls was only part of the ship-construction story. While shipyards won headlines for launching Libertys in a matter of days, the ships they built would have been useless if subcontractors all over the country had not made scheduled deliveries of the vast variety of machinery and equipment that went into them. For every Liberty ship launched, industry had to supply a three-cylinder reciprocating engine, standing all of three stories high and weighing 135 tons, a propeller shaft, two watertube boilers, one condenser, one steering engine, two anchors, two propellers (each ship carried an emergency spare), at least ten antiaircraft guns, six generators, and six steam pumps. Each ship also required booms, winches, fans, beds, ventilators, hatch covers, life rafts, lockers, compasses, chairs, gauges, ladders, stoves, and other equipment, thousands of miles of wiring and pipe (from ¼" to 12" in diameter), hundreds of valves, and a storeroom full of spare parts and fittings. The construction of one Liberty ship required 3,425 tons of hull steel, 2,725 tons of plate, and 700 tons of shapes, which included 50,000 castings.

Every EC2 carried at least four lifeboats; those converted into troopships were equipped with two or more additional boats. These were 24 feet long and certificated for 25 passengers. One boat out of four was fitted with a gasoline engine.

Even with this vast expansion of shipyard facilities, wartime ship production would never have reached such monumental goals had it not been for mass production know-how and the all-out use of prefabrication techniques. The Maritime Commission made a bold and courageous decision in replacing traditional riveted construction with welding for speed and economy of steel and manpower. Welding was still a fairly new process and still unaccepted by many naval architects, shipbuilders, and shipowners in 1941. Insurance firms, too, were still wary of welding.

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But selecting a simple design, perfecting mass-production techniques, and building the necessary shipyards were only part of the job. There were not enough qualified shipyard workers in the United States for all the new yards. Many men who could have built ships were going into the armed forces. So thousands of men and women who had never seen a ship in their lives were recruited and trained to work in the new yards.

All shipyards organized schools to train welders, shipfitters, electricians, joiners, and others needed to meet an anticipated peak requirement of 700,000 workers by 1943. By comparison, the usual peacetime labor force in all U. S. shipyards was less than 100,000 in the busiest years.

"Rosie the Riveter" became a wartime byword as women moved into the shipyards by the thousands, donning goggles, overalls and welding masks and looking as grimy as any male by the end of a working day. "Rosie" became such a part of the national scene in those years that she was immortalized by Norman Rockwell in a cover painting for *The Saturday Evening Post.*

At one time, women made up more than 30 percent of the work force in West Coast shipyards. By October of 1942, more than 400 of them were at work in Kaiser's Richmond yards alone, where Hazel Phillips repaired pneumatic drills, Kay MacAdams was a shipfitter, and Elizabeth Norden, five times a grandmother, was a burner. Esther Clark was a rigger's helper, Pearl Smith was a boiler maker's helper, and Mrs. Art Bjorhus worked alongside her husband as a shipfitter's helper. Jillian Tyrell-Feltham, an Englishwoman who lost her soldier-husband at Hong Kong and escaped from Manila just before it fell, worked for Kaiser as a weld checker—probably the first woman ever to hold down that job in a shipyard.

"Women," said Admiral Land, "make excellent welders. To the women it was like a sewing machine job."

On the whole, "Rosie" and her fellow workers "sewed a fine seam." Otherwise, the EC2 would never have survived its wartime rigors and gone on to serve over 20 years in peacetime operations.

But because of the press of work, lack of training, inadequate inspection, and other reasons, there was some careless and sloppy work in the shipyards. Such work was not always found out before a ship sailed, and probably accounted for the loss of some ships that had to drop out of convoy to make repairs. The *Henry Wynkoop* fractured her decks and side shell while loading in New York on 17 February 1943. The *George P. Garrison* developed cracks up forward and

in her deckhouse during a North Atlantic crossing. In the Alaskan theatre, the *John P. Gaines* broke up and was lost, the *Alexander Baranoff* broke in two and was welded together again, and the *Chief Washakie* developed extensive cracks that were then welded. The *Thomas Hooker* and *J. L. M. Curry* were lost because of structural defects. There was no evidence of sabotage in these ships.

The *John Philip Sousa* had continual trouble on her first voyage because grease was fouling up the boiler water. The ship was unable to sail on her second voyage until 13 buckets full of grease were removed from one boiler. This was a clear case of failure of shipyard personnel to clean away the protective grease used in shipping the boiler from factory to shipyard.

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On 6 September 1943, with more than a thousand of the "ugly ducklings" in the water, President Roosevelt had this to say about the nation's shipbuilding industry and its 700,000 workers, most of them war-recruited men and women who wouldn't have known a keel from a hatch cover before the war began:

> They have delivered on or ahead of schedule every ton of every ship they were called upon to build. They have smashed every production quota set for them so that today, less than two years after our entry into the war, the total deadweight tonnage of their ships more than doubles that of the entire American merchant marine before Pearl Harbor. By the end of 1944, new ships delivered by American yards will equal the combined pre-war merchant fleets of the United States, Great Britain, Germany, Japan and Norway.

The President had called for eight million tons of merchant shipping—"a great bridge of ships"—to be built in 1942. The astronomical figure staggered officials in the Maritime Commission and the nation's shipyards. But instead of deciding it couldn't be done, they accepted the challenge and vowed to give the President more than he had asked for.

By the end of 1942 they had turned out 746 ships of 8,089,732 deadweight tons. But this was only a beginning. The 1943 record was 1,896 ships of 19,238,616 deadweight tons, and of this number, 1,238 were Libertys. By 1944 the emphasis was on the faster turbine-powered Victory ships, but even at that the 1944 schedule still called for 800 Libertys.

In 1941 the estimated base construction cost of a Liberty was $1,500,000 and

contracts were written on this assumption. Contractors' fees contributed an additional \$60,000 to \$140,000 for each ship, this being contingent on whether the yard could claim a bonus for fast delivery or was penalized for not meeting a schedule. The price of a complete Liberty ran around \$1,600,000, although construction costs from yard to yard varied from a low of \$1,543,000 to a high of \$2,099,000. Rising costs of labor and materials also contributed to higher-than-estimate totals, although the spread between estimates and actual cost was negligible compared to the differences in many other procurement projects.

In almost every phase of wartime operations, there was some particular use that could be made of a Liberty ship. In fact, as Admiral Land said in 1943: "The Liberty ship is a product for war use. It can be classed with the tank, the fighting planes and other materials of war. It was produced to be expendable if necessary. If expended, it had served its purpose. Its production was necessitated because of a definite limitation on the amount of propulsion equipment, available for our higher type ships."

In the wartime use to which the Admiral referred, Libertys steamed to every port of the world where ships had to deliver supplies for Allied forces or load raw materials for war plants at home. They may have been "ugly ducklings," but President Roosevelt had been right when he said "... this ship will do us very well." Most of them had done better than that. Considering the hazards of wartime operations, losses were not excessive. A total of 195 Libertys were lost to torpedoes, mines, explosions, collisions, strandings, or other hazards of the sea.

As the powerful U. S. Navy beat the Japanese fleet into submission in the last days of World War II—using in the process considerable bombs, bullets, and beans carried in Liberty ships—the last of a long line of EC2s came off the ways. On 14 August 1945 Japan agreed to accept the terms of the Potsdam Declaration and surrender. On that same day the Liberty ship *J. Howland Gardner* was delivered. Six days later the U. S. Maritime Commission cancelled \$425 million worth of contracts for 135 ships, including some Libertys under conversion for special uses, and the great U. S. wartime shipbuilding boom was over.

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But the *Howland* was not the last Liberty ship. There was a last Liberty ship, obviously, because suddenly no more of them were being built, although there is considerable difference of opinion as to which ship was the last one. The final

ship on the Liberty list, hull number 3148, was the *Ora Ellis*, whose keel was laid on 23 July 1945. The *Ora Ellis* was delivered on 16 October 1945. But the *Walter F. Perry*, whose keel was laid several days ahead of the *Ellis*, was delivered on 20 October, four days after the *Ellis*. To complicate matters, the *Albert H. Boe*, laid down and launched with the *Perry*, was delivered on 30 October, still ten days later.

For some unknown reason, on 30 June 1945 the Maritime Commission issued a press release heralding the *Stanley R. Fisher* as being the last of the Liberty fleet. Built by the New England Shipbuilding Corporation and named for a merchant seaman lost when his ship was torpedoed, the *Fisher* was delivered on 1 July 1945. Actually, 16 keels were laid and 16 ships were delivered after the *Fisher*. So, the *Ellis* was the last ship laid down, *Perry*, *Boe*, and *Ellis* were the last ships launched—all on the same day—and *Boe* was the last ship delivered.

To the question as to how many Libertys were built, there are almost as many answers as to which one was last. It all depends on whose tabulations are used. Liberty hulls were numbered in consecutive order, with *J. L. M. Curry* being 1, and *Ora Ellis* being 3148, but nothing like 3000 ships were built. Many blocks of hull numbers were cancelled for one reason or another. Frederick Lane's *Ships for Victory*, published by Johns Hopkins Press in 1951, the most detailed and comprehensive report of the U. S. shipbuilding program, sets the Liberty total at 2,708. The Maritime Commission, on whose records the book was based, issued a 1 July 1945 press release stating the Liberty fleet total was 2,580, not including some military versions still under construction and not yet delivered. The Maritime Commission's official construction report set the total at 2,751. The American Bureau of Shipping, which surveyed all ships for insurance purposes, established the total as 2,742. This included 2,580 regular EC2 hulls (the Commission's Liberty Fleet of 2,580), 60 *Ocean*-class Libertys for Britain, 20 aircraft transports (ZEC2-S-C5), 12 colliers (EC2-S-AW1), 8 tank carriers (ZEC2-S-C2), and 62 tankers (Z-ET1-S-C3).

No matter which total is used, the Libertys still comprised the greatest standardized fleet the world had ever seen. No one who helped design, build, or sail them in World War II could have foreseen that some of them would still be doing well, plodding the seas as an important segment of world merchant marine fleets nearly twenty years later. The wartime expendables had become nearly indestructible.

LIBERTY SHIPS FOR VICTORY

By Howard L. Vickery

Vice-Chairman, United States Maritime Commission

REAR ADMIRAL HOWARD L. VICKERY, U. S. N.

The United States is engaged in the mightiest shipbuilding effort in history.

The program's schedule calls for the production and delivery of 2100 vessels totalling 22,000,000 deadweight tons in 1942 and 1943. About 1500 of these ships will be emergency cargo vessels known as Liberty ships. The others will be tankers and cargo vessels of special Maritime Commission design.

To meet this schedule the country's shipbuilding capacity has been increased more than 500 percent in five years. Our nation is now in a position to build more ships than all the other countries in the world combined—friend and foe. Since the emergency construction project was begun about a year ago the Maritime Commission has authorized the building of more than 200 new shipways in shipyards on the Atlantic, Pacific and Gulf coasts.

The construction program is based on a wholesale application of mass production technique, so efficiently employed by the automobile industry, and a spread-the-work campaign which has placed orders for ships' parts with 500 large and small plants in 32 states. The Maritime Commission put spread-the-work into operation more than a year before the idea became a general policy.

In Tennessee there are plants making boilers, rudder fittings, hatches, and cargo booms; in Kentucky and West Virginia, it's valves and bulkheads and hull steel. Over in Indiana lifeboats are coming from Kokomo and stuffing boxes from Mishawaka. Across the line in Illinois the wartime merchant fleet is getting trolleys, hawser reels, and rigging fittings from Chicago; brass valves from Rockford, pumps from Mendota, and lighting gear from Des Plaines. In many another state the work is spread to take advantage of every shop that can contribute to the great program.

The Commission purchases everything that goes into the building of Liberty ships, retains it in a central pool, and consigns it to the yards as required. In pursuance of this policy, we have farmed out engines to be built in a dozen different plants. However, one engine builder made all the working plans and all the engines are duplicates; thus, an engine from any plant will go on any foundation in any ship. Moreover, we do the expediting. We follow the work to ascertain when the material is needed in the yard, and, as it is required, we issue shipping instructions. Our expeditors circulate throughout the country and visit all the manufacturing plants under contract to the Commission, and are thus able to report whether the manufacturers will be able to meet delivery dates or whether they will better them.

Since we stepped up the ship program immediately after the Pearl Harbor incident, the 48 shipyards in 21 states that are working with the Maritime Commission have been averaging one ship launching a day and two or three keel layings a day. In February the project reached the point of one ship delivery a day. By the fall of 1942 the schedule calls for three daily launchings and an average of two daily deliveries. In 1943 the de-

liveries must average three per day, if our schedule is to be maintained.

We are completing Liberty ships from keel to delivery in 105 days—3½ months. This is a record. The best time made at Hog Island during the first World War was 7 months and 24 days, and the average there was 11 months. A Liberty ship is on the ways 60 days and after launching 45 days are required for final fitting.

The 1500 Liberty ships will be as identical as two cars of the same model. Chief characteristics of these vessels, as conceived in the original plans, are minimum cost, rapidity of construction and simplicity of operation. Confronted at the outset with the problem of obtaining engines for this vast new fleet without interrupting the progress of the Government's long-range shipbuilding program, the Maritime Commission solved the production riddle by resorting to a less advanced type of propulsion machinery for its Liberty ships. Adoption of the older type of triple-expansion reciprocating engines, it was found, would tap unused manufacturing facilities within the country without creating a production bottleneck.

Should it be considered desirable after the emergency period is over, it would be possible to convert the Liberty ships into faster carriers by replacing their propulsion machinery with Diesels or with turbines and gears.

With an overall length of 441 feet 6 inches, a beam of 57 feet, a depth of 37 feet 4 inches, and a total displacement of 14,100 tons, the Liberty ships will have a gross tonnage of 7185 tons. Of the single-screw, full scantling type, with raked stem and cruiser stern, the hull is subdivided by seven main bulkheads providing five cargo holds. The engines and boilers are located amidships in a single compartment.

The rapidity with which the Liberty ships are being built in no sense implies a sacrifice in efficiency or seaworthiness. The cargo gear is designed for simplicity of operation to meet the handling difficulties likely to be encountered in foreign ports. Steam-driven winches are used throughout. Emergency equipment will be complete to the last detail.

The Liberty ship's normal complement of 44 officers and crew are well provided for. Their quarters, though somewhat smaller than those being built into the Commission's long-range type ships, are nonetheless modern and comfortable. The officers' and crew quarters are all in one house, thus eliminating the need for passing over weather decks for messes, etc.

Construction methods employed on the Liberty ships conform to modern American shipbuilding practice—extensive use of welding to save time and steel, and the modification of fabrication methods to permit greater utilization of unit assembly work. The Liberty ship presents a trim, seagoing appearance. Riding low in the water, with its long, slender prow and its simple straight-lined superstructure, it will knife its way through the waves as gracefully as any vessel afloat.

But there won't be any Victory fleet of Liberty ships and there won't be any Victory for the United Nations, if any unit in the great construction assembly line fails to carry out every detail of its assignment. Every part that goes into a ship must be made on time, shipped on time, arrive on time, and be assembled on time. Any breakdown along the way will retard the whole process.

In particular two factors are vital: First, there must be a continuous flow of steel; and, second, there must be a continuous flow of labor. There must be no strikes. Some 500,000 man-hours are required to produce a Liberty ship. During the first ten months of 1941, strikes in the shipbuilding and ship repair industries—and they must be considered together—resulted in the loss of over 5,000,000 man-hours.

This means that the equivalent of ten Liberty ships has been lost somewhere along the way—*lost beyond recovery.* In one sense this kind of loss is more damaging than the loss of a preliminary campaign in a long struggle—for, ground can be recovered, but time is lost forever. We must make certain there are no interruptions in our labors.

Commission Reviews 1942-1943 Program for 2300 Vessels

Contracts for the 23,000,000 deadweight tons of merchant ships which President Roosevelt has set as the 1942-1943 wartime goal for American shipyards have now been awarded, according to a Maritime Commission announcement on April 2.

The contracts call for delivery into service of nearly 2300 ships, either cargo vessels or tankers, before the end of the two-year period, the greatest merchant shipbuilding program in world history. This program does not include more than 700 other craft under Maritime Commission order, such as tugs, wooden barges and small power boats, for which no tonnage is figured.

Present schedules call for delivery of nearly 750 ships in 1942 and the remainder in 1943. The average scheduled production for the two-year period is about three ships a day. Delivery of one ship a day was begun in February and the peak of production is expected to be reached late this year.

Approximately 1500 of the vessels under contract are emergency cargo carriers of the Liberty ship type. The remainder are C-types and tankers of various Maritime Commission standard designs.

In addition to contracts for ships, the Commission has authorized construction of 16 new shipyards under government financing. Two others have been built under order by the British government and will build Liberty ships when their British contracts are completed. Additional ways in existing yards also have been authorized, so that the capacity of American shipyards capable of building oceangoing vessels of 400 feet or longer has been increased about 500 percent in the last two years. Merchant ships of all types are being produced in approximately 60 shipyards on all coasts and the Great Lakes.

Expansion of the American merchant ship program since 1937, when the Maritime Commission was established, is as follows:

The original peacetime program adopted in 1937 and put into operation in 1938 called for 50 ships a year—a total of 500 in 10 years.

In 1939 this was expanded to 100 ships a year; in 1940 to 200 ships; in 1941 to 400. Schedules for 1942 call for about 750 ships and for 1943 approximately 1,500.

Up to this time the expanding schedules have been maintained. Future production, under the accelerated schedules, depends on three principal factors, according to statements by Admirals Emory S. Land and Howard L. Vickery, Chairman and Vice Chairman of the Commission, respectively. Those factors are:

1. Availability of materials, principally steel, promptly when needed.
2. Adequate supply of skilled labor.
3. Productivity of the individual, either worker or executive, which is dependent on morale, and no slowdowns or work stoppages.

Off to a Flying Start

Up to March 15, 1942, 142 keels had been laid for Liberty ships, and there have been 61 launchings. There are 22 of these vessels now in service. The average construction time of three and one-half months from keel laying to delivery is about one-half of the originally estimated time of construction. This represents a really remarkable achievement when it is realized that during the first world war it took ten to twelve months to complete merchant vessels of similar tonnage.

When the Liberty ship program was commenced in March 1941 the industry had already expanded threefold in the number of workers employed by it in early 1939 and had also made vast plant expansions to accommodate the large tonnage then under contract. In addition to this, there has been very material dilution of managerial and supervisory personnel to accelerate the already large expansion. With the creation of the Liberty ship program from the President's emergency fund which had involved 200 ships and then 227 ships under the lease-lend program, the shipbuilding industry and the allied industries were forced to raise their sights materially.

When the magnitude of the job is considered and the quality of the ships produced is taken into consideration, a really remarkable record of achievement has already been made. In less than a year's time up-to-date and modern shipbuilding plants have been constructed from which complete vessels have actually been launched.

Ocean Vanguard a Record Ship

A forerunner of the Liberty type of ship, the S. S. *Ocean Vanguard,* built for British account, was constructed in a new plant, constructed especially for the purpose, and the vessel was launched within 125 days from the time the keel was laid and delivered in 197 days. This in itself was a highly commendable record. The *Ocean Vanguard* has already completed her maiden voyage with a full cargo in which she steamed 15,000 miles during winter weather in the Atlantic.

On this voyage the guaranteed fuel consumption and speed called for in the specifications and in the contract actually were exceeded. The sturdiness and strength of her welded hull construction was amply demonstrated by the fact that in a collision suffered while on the voyage her hull plates were only buckled and not fractured.

Sir Amos Ayre of London, the Director of the Merchant Shipbuilding Administration of the British Admiralty, has been quoted as saying in regard to this vessel:

"So far as the *Ocean Vanguard* is concerned we are most agreeably pleased. She is certainly a fine job; especially in view of the fact that she is the number one ship of this type constructed in a brand new yard."

The record made by this vessel so far is indeed a fine compliment to American ship design and ship construction.

While this vessel was delivered in a relatively short time, it is believed that within a very short time the industry will be delivering vessels in less than 100 days from the date of the laying of the keel plates.

The first of the Liberty ships completed was the S. S. *Patrick Henry,* whose keel was laid on April 30, 1941. This vessel was launched on September 27, 1941, and delivered on December 30, 1941. This was remarkable time for the construction of this type of ship. Under date of March 18, the press carried the story of the arrival of the first Liberty ship at the port of Alexandria, where she discharged a 10,000-ton cargo of war supplies so urgently needed in the Near East. On her maiden voyage this vessel steamed around the southern tip of South Africa, through the Red Sea and the Suez Canal to the eastern Mediterranean.

On February 28 of this year there were 1222 of these vessels under contract with American shipbuilders. To this number must now be added the construction of 234 additional emergency cargo vessels of the Liberty ship type. The award of these 234 additional ships brings the total number of Liberty ships ordered since the beginning of the program to 1456 vessels, of which 1116 have been ordered since January 1, 1942.

The wartime shipbuilding program of the United States today calls for construction of approximately 2100 cargo vessels and tankers, totalling about 22,000,000 deadweight tons to be constructed in 1942 and 1943. This is the largest shipbuilding effort in history.

This vast shipbuilding program, of necessity, has to be recognized as a national industry effort because of the dependency of shipbuilders upon other industries to supply on time and in the proper sequence the materials, engines, boilers, and the thousands of other items that go into the construction of a vessel. Given a constant orderly flow of these essential materials and equipment and given the constant and uninterrupted service of labor, the shipbuilding industry is prepared to meet the call of the President of the United States for the construction of at least 8,000,000 tons of merchant ships this year.

The industry is thoroughly alive to its responsibilities to the nation and the preservation of all that we hold dear and will spare no effort to produce the ships necessary to carry the implements of war to the far-flung battle lines in this global war.

Crews

MANNING THE SHIPS

Building a huge fleet of Liberty ships was one thing, but finding men, especially trained officers, to sail them was another matter. People who had never seen a ship could be trained to make the pieces with which to build one, but once the ship was in the water, loaded with ten thousand tons of cargo, and ordered half around the world, it took men with experience to get her there. Without crews, the ships would have been absolutely useless. Supplying trained men for the emergency fleet was a highly important but little appreciated achievement of World War II.

In 1940 the entire United States merchant marine, from ocean liners to tow-boats, included some 65,000 men (and a few women). By June of 1943 this sea-going force had increased to 85,000. A year later it numbered 175,000 and when the war ended in August, 1945, it had reached a high of 250,000.

Who were these men? Where did they come from? How did they acquire the training necessary to take the ships where they were going and bring them home again?

Wartime merchant seamen came from all parts of the United States and from some Allied nations. Boys too young to be drafted joined the merchant marine.

Men too old for the draft, or who for one reason or another were not accepted by the armed forces, found in the merchant marine an opportunity to take an active part in the war effort.

Some few men went to sea for what in those days was good pay and some did so to escape military service, but these were not the overriding attractions for most wartime volunteers. A man could make good pay in shipyards and war plants without any of the risks of seafaring. And as for escaping the draft, many thousands of young men who were attracted to sea by wartime recruiting posters had little if any concept of what life in the merchant marine was like—or what pay or danger was involved.

Captain Hollie J. Tiedemann, superintendent of the St. Petersburg training station of the U. S. Maritime Service, believed that relatively few of the thousands of boys who passed through the government training schools were attracted by the promise of high wages. "Most of them," he said, "came with a desire to have a part in the war. Money was a secondary consideration. The many I had occasion to talk to had little idea when they arrived at the school just what the pay would be. They had heard that the merchant marine was a good place to see action in a short time and they were eager to get in it."

Early in the war, ships sailed with a nucleus of old-timers among the crew, but later there were so many new ships that there were not enough veterans to go around. Many new ships were fortunate if they had a dozen men in the unlicensed crew who had more than a voyage or two behind them.

An early Liberty would have a crew of seagoing men from the prewar merchant marine, plus a handful of newcomers. The boatswain might be a tanned and brawny Dane; some of the able seamen might be Norwegians or Swedes who had spent most of their lives in sail and steam. The firemen were probably veterans of the old coal-burners; and oilers might be old-timers who could squirt oil from a can into a thimble-sized oil cup with the engine doing 70 revolutions a minute and never spill a drop. Cooks might have been Filipinos, wiry little men who traveled together from ship to ship; spoke Tagalog, and gambled their earnings away at cards long before the ship had reached its first port.

Such typical prewar merchant sailors knew no home but a ship—they were conscientious, hard workers at sea and hard drinkers in port. They made good shipmates, for they did their jobs and expected others to do the same. They were the kind of men who went down with the *Catahoula*, the *Selma City*, the *Norlindo*, the *Ajoundria*, the *Marore*, and a hundred other ships in the early days of the war. It is an eternal tribute to the quality of these men, rough, tough and unpol-

ished as they were, that ships never lacked crews or missed a sailing date in the days when many of them had no guns or armed escorts to protect them.

Such quality was highly diluted later in the war, of course. The merchant marine took in thousands of men who had never seen a ship before they arrived at one of the Maritime Service training centers for a quick course of indoctrination before shipping out. Some of them were newcomers who knew little about the job and cared less.

And, of course, there were the vociferous few seeking the fast buck; the kind for whom, as the saying went, there were only three kinds of time on board ship: sack time, coffee time, and overtime.

The ships kept sailing despite a critical shortage of key personnel, but it took almost superhuman efforts on the part of the War Shipping Administration (WSA) to juggle crews. Often a ship arriving from a foreign voyage would be tapped for an engineer, radio officer, boatswain, or perhaps even her master so that another ship that had completed loading its cargo could join a convoy on schedule.

Some ships met their sailing dates by collecting the rag, tag, and bobtail of the waterfront. One ship of 1921 vintage left New York in 1944 with three Brazilian firemen who had signed on because the shipping agent promised them the vessel would go to Rio for a cargo of coffee. One of the oilers was an Army veteran who had lost some of his fingers in the Aleutians. The chief cook was a middle-aged German-American who had walked out of his bakery in Wisconsin because he "couldn't stand to be readin' about the war and not doin' anything." The chief engineer was a 72-year-old retired Navy captain who had come back to sea to help the war effort. The second engineer was a Yugoslav who tried to convert the men on his watch to communism. The crew included an Englishman, a Dane, and a Jamaican.

The amazing thing was that with such hodgepodge crews, the ships left port, for the most part maneuvered according to convoy plan, arrived at their assigned destination, and came home again.

Finding and training enough engineers, navigators and ship handlers was a far different matter from filling the required unlicensed billets aboard a ship. Handling a ship in convoy, especially in fog, dark of night, or evasive maneuvers; or taking it to a port halfway around the world was not something that could be left to novices.

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Crewing the ships was a joint effort by the various maritime unions, government and steamship company hiring halls, and the government training schools, including the United States Merchant Marine Academy and the state maritime academies operated by Maine, Massachusetts, Pennsylvania, New York and California.

The War Shipping Administration conducted a nationwide recruiting drive in 1942 to find former seamen who had left the merchant marine for jobs on shore. More than 16,000 men with prior experience returned to sea by November of 1942, a time when the shipping industry was still experiencing heavy losses. In New York alone, 30,000 men applied for berths in a ten-day period. About 5,000 of these were immediately dispatched to waiting ships. A number of states aided the recruiting program by allowing Civil Service employees to return to sea without loss of seniority.

A training division, the U. S. Maritime Service, was set up within the War Shipping Administration in July of 1942 under Captain Edward Macaulay, with Telfair Knight as director of training. Commander Richard D. McNulty was assistant director and supervisor of cadet training.

The Maritime Service operated seven training ships, but their activities were considerably curtailed by the dangers of wartime cruising. One of the ships, the *American Mariner*, an EC2 especially altered during construction to serve as a schoolship, helped to give at least a modicum of actual shipboard experience to thousands of men before they shipped out for the first time. Built by the Bethlehem-Fairfield yard at Baltimore, she accommodated 400 trainees and a crew of 132 and operated out of Staten Island, New York, making week-long trips in the protected waters of Long Island Sound. After the war, she became a missile-tracking ship for the Army, then was used as a bombing target in the Chesapeake Bay. Her hulk is still there.

The largest of the training establishments for unlicensed seamen was the one at Sheepshead Bay, Brooklyn, New York. Occupying the site of a former amusement park, this base was intended to process 30,000 men a year in short indoctrination courses. Other schools were located at St. Petersburg, Florida, and at Avalon on Catalina Island off the Southern California coast.

Officer training schools were established at Fort Trumbull, Connecticut, and Alameda, California. There was an acute shortage of radio operators when the mass production of ships commenced and schools to train them were located at Gallup's Island in Boston harbor and at Hoffman Island, New York. In addition,

there were emergency cadet officer schools at Pass Christian, Mississippi, and San Mateo, California.

The WSA schools for unlicensed men and officers, plus upgrading and refresher courses, turned out 270,000 graduates, including 10,000 officers from the U. S. Merchant Marine Academy and the state maritime academies. The short courses for upgrading unlicensed men to officer status produced 23,000 mates and engineers. Basic schools trained 155,000 men for shipboard jobs. More than 7,500 radio officers were trained as well as 5,300 pursers, who also served as pharmacist's mates.

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During the summer of 1943 there were times when as many as 600 deck officers had no licenses, sailing on temporary emergency endorsements issued by the Coast Guard. There was always a greater shortage of engine-room personnel, and at the same time, as many as 1,000 engineers had no licenses. Hundreds of seamen who had sufficient sea-time requirements but lacked the official license were moved up into officer positions, and the ships went out, usually on schedule.

Every possible scheme was tried to find qualified people. Employers were asked to release men with prior sea experience, and veteran merchant seamen who had been drafted into the armed forces were released for service in the merchant marine. Hundreds of men were added to the merchant marine in this way. In addition, shoreside employers were warned not to hire merchant marine personnel who might come ashore looking for jobs, regardless of age or draft eligibility.

The age limit for enlistment in the Maritime Service was lowered to 16 years in May, 1944, as a further expedient toward getting men. During the following week more than 7,000 adventure-minded youngsters volunteered at some 40 recruiting offices throughout the nation.

But it was not only the youngsters who showed up and wanted to go to sea. Men who were old enough to be their grandfathers, and who could have stayed at home and listened to war reports on the radio, chose to be back where the action was.

Percy P. Evans was 70 years of age when he signed on as engineer for the *Joseph R. Drake*. William Mallett had been chief engineer on the transport *America* in World War I; he returned to sea in World War II as chief engineer of the *John Davenport*.

Otto Preussler, better known as "Lucky Uncle Otto," had gone to sea in the Russo-Japanese War and again in World War I; in World War II, he sailed as a cook on several Liberty ships. James A. Logan, 76 years old when he signed on as a cook for the *Joshua Hendy*, had 49 years of sea service up until that time. Another old-timer, Henry Jones, went to sea in England at the age of 14 during the Boer War and had been 40 years at sea when he signed on the *Abraham Lincoln* as second mate in 1944.

Among the many seamen lured to the convoy routes was Thomas Cavely, skipper of a New York harbor ferryboat; his longest voyage in years had been between Sixty-ninth Street in Brooklyn and St. George on Staten Island. Cavely shipped out as first mate on the *Waigstill Avery* on a voyage to the Persian Gulf, and when the *Avery's* captain died there, he took over and brought the ship safely home. Cavely wasn't a complete stranger to deep water, having acquired a master's license in the British merchant marine in World War I.

Along with the old graybeards, men of youthful years commanded many of the wartime Libertys and proved themselves equal to any of the hardy young mariners who sailed in the famous American clipper ships. William Travers, 22 years old, was captain of the *James Ford Rhodes*. His brother, the first mate, was 21; the third mate was only 20.

Harold H. Niss, barely 24 when he took command of the *John W. Gates*, felt it necessary "to assume all the bravado possible, especially as the first and second mates were sea dogs in their sixties." To temper his exaggerated self-confidence, he wore his cadet hat from the New York State Maritime Academy. "It always confused the customs and immigration people. The boarding officials always went to the third mate, only to be referred to the kid master in the cadet's hat." But, as the kid master could proudly point out, he took the ship everywhere with never a casualty. The *Gates* reached Constanza, Rumania, in July of 1945, probably the first American ship into the Black Sea after VE Day.

There could be a wide spread in ages among crews of Liberty ships. When the *Oliver Wolcott*, left New Orleans "for ports of the world" in October of 1944, Chief Engineer Frank Aiken, and Chief Mate Hugh Young, were both 67 years old. Radio Operator Herman Stone Jr. was 19, and Acting Second Mate John Shuttleworth was only 20. A dozen of the 44-man crew were under 20 and several were only 16. This was truly an all-American crew, from 15 different states.

While high-school lads and old granddads were going to sea on the Libertys, a good many mascots went to sea with them, although there was a general rule

against pets on ships. The crew of the *Robert Newell* included two mongrels, Sparks and Snafu. Sparks had a broken leg when the ship's radio operator, Moe Preskell, then a Maritime Service trainee, found him on a Boston street and took him to a veterinarian to have the leg set. The cost of the operation was shared by fellow trainees at the Gallup's Island Radio School. When Preskell shipped out on the *Robert Newell*, Sparks signed on, too.

The *Jonathan Grout* had a mongrel dog named Brownie, picked up in Puerto Rico. Brownie jumped into an open hatch at Khorramshahr in the Persian Gulf and died a few days later as the ship steamed down the Arabian Sea. Brownie was sewed up, sailor style, in a canvas bag and given a farewell salute with a burst of 20-millimeter fire as he was dropped over the side.

Even some women wanted to go to sea. Most of the larger passenger ships in prewar service carried women as stewardesses, hairdressers, and in some other capacities. When the ships were taken over by the government, they lost their jobs. One of them, Betty Jackson, wrote to President Roosevelt about it: "I am one of the many seafaring women.... We are not afraid of the dangers and we are willing to put up with any inconvenience as long as we can be reinstated and go back to sea."

Admiral Land replied for the President, telling Miss Jackson that her request was praiseworthy, that women were quite capable in the jobs thay had been doing at sea, but that there were no provisions on wartime ships for women crewmembers.

Despite the Admiral, some women did get to sea, and at least three of them were authorized to wear the merchant marine combat bar after their ships were torpedoed.

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On 17 November 1941 Congress authorized the use of Navy guns and gunners for the defense of American merchant ships. The first vessel so protected was the SS *Dunboyne*, which received several .50 caliber machine guns and a seven-man Armed Guard detachment under a coxswain on 2 December, just before she sailed for Murmansk. The SS *Expositor* sailed for Murmansk early in 1942 with an armed guard crew of four seamen and a signalman under Lieutenant (junior grade) Robert B. Hicks.

By the end of December, 1941, 14 American merchant ships had naval Armed Guard crews. By the end of 1942, there were Armed Guard units on 1,000 Ameri-

can ships, almost all of them commanded by junior grade lieutenants or ensigns of the Naval Reserve. In addition, there were Armed Guard contingents on some American-owned vessels under Allied colors, primarily Panamanian.

The gun crews at first numbered from 12 to 15 men. They were increased to as many as 27 later in the war. Merchant crewmen also had battle stations, serving as ammunition passers or assisting at the 20-millimeter guns.

On the *J. H. Drummond*, six of the Armed Guard lived in a cabin on the main deck, forward, port side, and three on the starboard side. Their commander had a cabin on the bridge deck. Sixteen gunners lived in the after deckhouse. This berthing arrangement, with slight variations, was used for the Armed Guard complement on hundreds of ships.

There was, undeniably, frequent friction between Navy gunners and civilian merchant seamen, often a discontent nurtured by the disparity in pay. Navy men shared the same ship and the same dangers but saw their civilian crewmates paying off at the end of the trip much more handsomely than they did.

There was friction, but there was also cooperation and good feeling. The merchant crew on the *Smith Thompson* sent a letter to Secretary of the Navy Frank Knox lauding the action of their Navy gunners in repelling air attacks on 4 October 1943.

Ensign Leon Robinson, the Armed Guard officer on the *Button Gwinnett*, commended the "splendid cooperation of Captain E. W. Braithwaite and his crew. "Your men," he wrote in a letter to the captain, "were of invaluable assistance in hoisting and passing of ammunition, and in relaying the 20-millimeter magazines."

An unusual incident of camaraderie and mutual respect between merchant crew and Armed Guard men occurred in April of 1944 when the Boatswain on the *Harry A. Garfield* died during an Atlantic crossing. Members of the Armed Guard acted as a guard of honor in dress blues with their merchant marine shipmates as the captain read the traditional service for burial at sea.

Most Armed Guard officers were intensely proud, and rightly so, of their commands. Lieutenant James M. Gatling of the *Henry Ward Beecher* reported, after the ship took part in the invasion of Southern France: "Heavy shrapnel has fallen on this ship and in the gun tubs on numerous occasions and 20-mm shells have been fired into it point blank by wild gunners, but this [gun] crew has never given an inch."

Many young Armed Guard officers felt it was their duty to evaluate the com-

petence and behavior of the ship's officers, especially the master. One even went so far as to report to naval intelligence that the ship's captain behaved "most suspiciously," and suggested that he was probably a spy. He attached a list of "suspicious incidents" that had occurred during the trip. Reports by Armed Guard officers contained many comments on the navigational ability of the ship's officers.

On the other hand, thoughtful shipmasters were frequently appreciative of the hard work and devotion of sincere, young naval officers and their men. Captain Kingdom S. Thomas of the *Uriah M. Rose* wrote to the Bureau of Naval Personnel:

> It has been my pleasure to have with me Ltjg. F. J. Szemala as Armed Guard commander . . . This voyage has been long and trying and during the entire period I have had the complete cooperation of Lt. Szemala and his men. Due to his energy and ability there has been no friction between the Armed Guard and the merchant crew.
>
> I also wish to commend him and his men for aid given the ship during a serious fire which occurred at Townsville, Australia, on March 29, 1944. This fire was discovered in the bottom of number four hold and in the immediate vicinity of some 200 cases of land mines.
>
> The naval authorities insisted on moving the ship into the stream in case there should be an explosion aboard and the merchant crew being unable to shift the ship and fight the fire at the same time, Lt. Szemala and his men took over the fire fighting under the master's direction and successfully aided in controlling the fire.

Not all men in the merchant marine were heroes, at least not any more than they were in the military services. Out of several thousand men who commanded Liberty ships, there were sure to be some who became befuddled in emergencies, who panicked when torpedoes hit, or who were just plain unfit for command. One group of Liberty ship survivors complained to United States naval intelligence at an East African port that their captain was "incompetent as a ship handler and navigator and was emotionally unstable." A report from Durban said his actions "indicated that he is neither normal nor reliable and it is doubtful if he is in a fit condition to command a ship." A dire wartime need for licensed master mariners provided jobs for many men who no steamship company would have considered for command in peacetime.

In contrast, when Captain George R. Bickford of the SS *Waigstill Avery* died

at sea, his crew collected $166 to buy a silver plate for his widow. "The old man was a skipper of the old school," said a report from the ship to union headquarters. "We all were sorry to lose him."

There was, unfortunately, more than one instance of a captain losing his head and forgetting to order "stop" for the engines or give official commands to abandon ship, causing confusion and loss of life. But such derelictions of duty were overshadowed many times by instances of heroism and service "far and beyond the call of duty," as indicated in the official Navy report of the sinking of the *Walter Q. Gresham:* "The master was highly commended by all of the crew for his coolness, ability, assistance and general good conduct. All survivors agreed that by his action and good judgment a panic was averted. He is directly responsible for the orderliness in abandoning ship."

The Armed Guard officer on one ship that made a voyage to Russia in 1943 said that relations between Navy and merchant marine personnel were most congenial and that the captain went out of his way to meet their requests.

"The merchant crew on this ship is about average," the report continued. "As it is inevitable under a set up where there are two such entirely different systems of discipline and standards of performance, there has been friction. Nothing of great importance, but at times most annoying. The center of most disturbance seems to have been the union (NMU) representative on board. This man, holding a dishonorable discharge from the Navy, is a constant agitator."

□

The merchant marine was a strange paradox of a peacetime industry operating under wartime conditions. Crews, in fact, came under the Articles of War and one Liberty ship at Alexandria lost half her deck crew to a prison camp when they refused to rig booms for loading tanks before the invasion of Sicily in a dispute over whether the job should be done by the shoreside stevedores or the crew. Army officials stepped in, read the Articles of War to the crew and escorted six of them ashore for months of rigorous road building in the Egyptian desert.

The maritime unions, quite naturally, were fearful that the merchant marine would be taken over by the armed forces and resisted any move in this direction. They pointed out, with considerable justification, that a Liberty ship under a civilian crew operated with less than 50 men, plus armed guard, while the same ship with a Navy crew would need 150 men or more.

Pay scales in the prewar merchant marine were moderate at best. From 1940 on, the government approved special, additional compensation for crews on ships subject to enemy attack. This compensation was finally standardized, effective 24 February 1943, in the form of voyage, area, and attack bonuses.

A seaman was paid an additional 40 to 100 percent of his total wages, including overtime, during the time his ship was transiting certain areas considered subject to enemy action. There was no bonus at all for voyages between Pacific coast ports and some other sections of the Pacific.

Pay was further boosted by an "area bonus" of five dollars per day for each day the vessel spent in any of three specified areas:

Murmansk—the Atlantic and Arctic Oceans east of the Greenwich Meridian and west of 60 degrees east longitude and north of 60 degrees north latitude.

Mediterranean—east of a line from Cape Spartel to Cape Trafalgar, including the Adriatic and Aegean Seas.

South Seas—the area bounded on the north by 20 degrees north latitude, on the east by 170 degrees east longitude, on the south by 20 degrees south latitude, and on the west by 120 degrees east longitude.

Finally, there was a bonus of $125 paid to each man if a vessel was under enemy attack at any port or anchorage.

It was no wonder that Armed Guard gunners, sharing the same dangers, felt that they were coming out on the short end and expressed their resentment against the better-paid merchant crew.

The merchant marine had never been known as a kid-glove profession; the very nature of life at sea attracted the adventurer, the homeless, the restless and, in short, the kind of man who loved freedom and hated routine or restraint. For many men who had no family or shoreside ties, a ship was a home. For others it was an argosy to adventure. For some, it was something to be endured until the next payoff, after which they would "live it up" until their money was gone, and then they would look for another outward-bounder.

Along with the professional seaman on prewar ships, many of them veterans of basic training in windjammers, there were "characters" or "performers," as

sailors called them, men who were emotionally unstable, alcoholics, or just plain hard cases who loved trouble. The tremendous wartime expansion inevitably brought a larger share of laggards, misfits, and performers aboard ship. They served only to provide the number of "bodies" required by law before the ship could sail, contributed nothing to the success of the voyage, and often turned an otherwise happy ship into a trouble ship.

In January 1943 the War Shipping Administration established a committee on crew disciplinary affairs, and from January through November of that year a sampling of log books were examined to see the extent and seriousness of disciplinary problems. In 302 logs that were inspected, there were 56 recorded infractions of shipboard discipline, of which 32 went to Coast Guard hearings and resulted in disciplinary action. It should be remembered that the merchant marine has traditionally been more tolerant in matters of shipboard conduct than the Navy, and many cases of bad conduct that would have resulted in disciplinary action on a naval vessel went unrecorded on a merchantman or were dealt with in such fashion that the incidents were not remembered officially. Also, a merchant ship captain had to reckon with a union official when the ship returned to port and often considered it easier to forget bad conduct than argue the merits of the case with the accused man and his union representative.

Typical of incidents involving Coast Guard action were these from the log of a Liberty ship in European waters in July of 1944:

> Fireman ——— ——— caused disturbance by throwing another man's clothes out of the focsle port. He was insubordinate and refused to obey a lawful command. He threatened an officer.
>
> Captain called to quell fight in crew's messroom. Cook ——— ——— and Able Seaman ——— ——— threatening each other with fire axe and knife. Cook bleeding profusely. Seaman accused of attack and chained to bunk.

Wartime Operations

THE MURMANSK RUN

As long as men write about the dangers of the seas and the heroic deeds of those who take their ship into battle against long odds, they will tell tales of the "Murmansk Run" in World War II, when merchant ships steamed into the stormy Arctic with supplies for the Russian front. It was then that the new Libertys went into battle for the first time and, along with their older companions, faced a relentless enemy as they fought through to the Barents Sea and the White Sea to reach the distant Russian supply ports of Archangel and Murmansk.

This supply route was absolutely vital to the Russians if they were to hold out against the Nazi offensive. Without the Allied ships that made the voyage with products from the American war arsenal, the Russians may well not have beaten back the German invasion.

The only other deepwater route to Russia terminated in the Persian Gulf ports, but the rail lines and roads that ran from the Gulf to the interior of Russia would, because of their length and their limited capacity, have been unable to carry the vast amount of munitions and food needed by the Russians. All other supply routes were under German control. Ships had to make the Murmansk run to keep Russia in the war.

A voyage to North Russia was never a routine affair, for there was always the hazards of storms and arctic ice, whether or not the ship faced enemy attack. From a day or two after leaving the points of departure--Loch Ewe in northern Scotland, or Reykjavik in Iceland—ships could expect submarine surveillance or attack while they steamed 1,600 miles from Scotland to Murmansk or 1,500 miles from Reykjavik to the same port.

Convoys, and in a few cases unescorted merchantmen, sailed within easy striking distance of German air bases spaced strategically along the coast of Norway from Bodo, just above the Arctic Circle, to Banak, a short distance from North Cape. Added to the threat of planes and submarines was the constant possibility of a foray by German capital ships or destroyers based at Trondheim and various fjords along the coast. The battleships *Tirpitz* and *Scharnhorst* and the battlecruisers *Admiral Scheer* and *Admiral Hipper* were a force in being that, while never attaining its potential for destruction on the convoy routes, did serve effectively to tie down a powerful segment of the British Home Fleet through a good part of the war. The Allies failed to realize that the principal purpose of this fleet was not to harass the Russian convoys, but to defend Norway against what Hitler believed was an inevitable Allied invasion.

Admiral Sir John Tovey, Commander-in-Chief of the British Home Fleet, told the Admiralty that the Germans would do everything in their power to stop the Russian convoys. This prediction certainly proved true. Although the German capital ships spent most of their time hiding in Norwegian fjords, waiting an expected invasion, submarines and aircraft pressed their attacks against the convoys until the end of the war. German destroyers were able adversaries, too, accounting for a number of merchantmen and convoy escorts when they accompanied the larger combat craft on convoy-hunting expeditions.

These were by no means the only threats to ships making the Murmansk run. During the short northern summer, 24 hours of daylight made it possible for German aircraft to attack continuously from the time ships came within striking range. Throughout the rest of the year, the merchantmen and their hard-worked escorts, especially the destroyers and smaller craft, had the world's worst weather to contend with: spray that froze on topside surfaces, blinding snow, driving sleet, and violent storms that tossed ships about and hopelessly scattered convoys.

Careful and well-planned convoy protection was often disrupted by storms. From 24 to 27 March 1942, convoy PQ13 was scattered over 150 miles of ocean by a storm. Pack ice made matters even worse. In those four days of trouble off

North Cape, five merchant ships were sunk by submarines and aircraft, and the British cruiser *Trinidad* was damaged in a battle with German destroyers.

In the winter and spring of 1942, President Roosevelt and Harry Hopkins, as well as Premier Josef Stalin, continually pressed the English to step up the number and the size of convoys to Russia, despite protestations by Winston Churchill and the Admiralty that their naval forces, especially in the matter of destroyers, were stretched to the limit.

Stalin sent an urgent message to Churchill in May of 1942 in which he said, "I am fully aware of the difficulties involved and of the sacrifices made by Great Britain in the matter (the Russian convoys). I feel, however, incumbent upon me to approach you with the request to take all possible measures in order to ensure the arrival of the above-mentioned materials in the USSR in the course of May as this is extremely important for our front."

The situation reached a climax that month. Dozens of Russian-bound ships were waiting in Iceland, and Churchill approved a much-debated plan to sail a convoy—PQ16, of 34 ships—in the latter part of that month. "The operation is justified," he said, "if half gets through."

There was Stalin's own assessment of the importance of these convoys to Russia's ability to hold back the German invader. It is no exaggeration, in the light of history, to say that the convoys kept the Russians in the war. The Russian front was no less important to the winning of the war than the Normandy landings or the invasion of Okinawa.

The understandable British reluctance to accept the heavy losses to merchantmen and escorts on this run, and the continued Russian and American insistence that the convoys should move regardless of losses, was a matter of contention that created bitter feelings and suspicions despite the polite wording of official communiqués.

The British viewpoint was expressed by Captain S. W. Roskill, R.N., who wrote in *War at Sea* that "the Russians never relieved the Home Fleet of any appreciable share of responsibility for defending the Arctic convoys." Neither, for that matter, did the United States, where ardent protestations of the need to sail the ships was not accompanied by any offer of escort craft to help see them through. Indeed, the U. S. Navy was so woefully short of escorts and trained personnel that it couldn't even protect Allied ships along the Atlantic seaboard.

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Forty convoys, with a total of more than 800 ships, including 350 under the U. S. flag, started on the Murmansk run from 1941 through 1945. Ninety-seven of those ships were sunk by bombs, torpedoes, mines, and the fury of the elements. Were the Murmansk convoys instrumental in keeping Russia in the war? They carried more than 22,000 aircraft, 375,000 trucks, 8,700 tractors, 51,500 jeeps, 1,900 locomotives, 343,700 tons of explosives, a million miles of field-telephone cable, plus millions of shoes, rifles, machine guns, auto tires, radio sets, and other equipment.

The first convoy to Russia—six English ships and one Russian—sailed from Scotland in August of 1941 and delivered 15,000 tons of cargo without incident. The first Liberty ships to make the Russian run were the *R. H. Lee*, *Zebulon Vance*, *John Randolph*, and *Francis Scott Key*, which set out for Murmansk in the early convoys of 1942.

"From Philadelphia to Murmansk," the deck log of the *Francis Scott Key* began, when the voyage commenced in Philadelphia on 29 January 1942. But many months passed before the ship reached her destination.

By March the *Key* was in Halifax, Nova Scotia, ready to join a ten-knot convoy across the submarine-infested North Atlantic.

> March 3, 1942, 11:00 a.m.—Stand by engines 12:00 noon. Anchor aweigh. Standing out the river. 1:00 p.m., half ahead, pilot away. Overcast and raining. Vessel pitching moderately. Shipping heavy spray over all.

They were routine comments from a ship's log, but for vessels outward bound on the Russian run they signalled a departure from safe haven into a hazardous and stormy unknown; and for many a ship and crew, a voyage of no return.

For anyone who has sailed in a freighter on the wintry North Atlantic, these entries in the log will recall the sight of angry, mountainous spray-topped seas and the sound of wind howling and screeching through the stays.

> March 4. Vessel rolling heavily. Overcast and heavy fog.
> March 7. Sighted convoy and rejoined. Easterly gale.
> March 9. Overcast. Fog banks. Vessel rolling heavily. Heavy N. E. swells.
> March 12. Ship pitching and rolling and shipping water over the deck.

The *Francis Scott Key* was some 13 days reaching Greenock, Scotland, a distance of 2,712 miles at a little better than 8 knots. There she joined a convoy to Iceland, but collided with a destroyer en route and missed the Murmansk convoy she had originally been scheduled to join.

She sailed from Reykjavik on 26 April in convoy PQ15 of 23 ships, which encountered intermittent air and submarine attack during the nine-day run to Murmansk. The convoy lost only one freighter, blown up and sunk by an aerial torpedo.

Five gangs of 40 men worked night and day, unloading the ship in seven days. There were numerous German air raids at Murmansk but no ships were damaged and the *Francis Scott Key* left on 21 May. She reached Iceland on 29 May after a 1,615 mile run. The ship was back in New York on 31 July, still lucky. But only two weeks out of New York the *Seattle Spirit*, an old World War I Liberty-fleet ship sailing with her, was torpedoed and sunk.

Long voyages and the constant danger of being sunk, especially in winter weather, were hard on crews both physically and mentally. By the time the *Francis Scott Key* arrived in New York, tempers were raw. There were numerous fights among the men and one of the Armed Guard detachment threatened to "blow the first mate's brains out" for inadvertently showing a light while taking a nighttime bearing on the bridge.

The *John Randolph* and *Richard Henry Lee* were the only Liberty ships in convoy PQ16. On 24 May, the *Lee* reported floating mines while the convoy was steaming through patches of thick fog. The mine warning instantly put everyone on the alert and made it especially tough for the black gang going on watch below. As soon as the fog lifted, German bombers hit the convoy.

On the morning and forenoon watches of 25 May, about a dozen bombers and torpedo-bombers attacked. One plane was shot down by the *Lee*'s Navy gun crew. Like most ships making the run at that time, the *Richard Henry Lee* was armed only with light machine guns.

That evening the log recorded: "Air battle on again. All driven away. This is no child's play. Battling is furious. Fog banks save the day. Convoy fighting ice, mines, bombs, torpedoes and submarines."

Next day a sub attack was followed by an air raid in which one ship was sunk. "More blessed snow equalls," read the 1600 log entry.

On 27 May, a stick of bombs landed within 20 feet of the *Richard Henry Lee* with no visible damage. The machine gunners ran out of ammunition and had to

broach the cargo for more. "During the attack," the log noted, "our ship's carpenter died. J. Thompson—a fine man. The raid was so heavy we only had time to cover him up with some blankets."

At 1100 on 28 May a funeral service was conducted. Before the Scripture reading was over, bombers roared in again and the crew had to run for the guns. And at 2000 that night: "Here they come again. Four bombs landed about 20 feet off the starboard side. Bomb fragments all over the deck." Next day: "Rain and fog. This is the kind of weather we like."

Courage and determination were bywords in the Murmansk run.

"I had little hope for her survival," said Commodore Onslow, senior officer of the escort for convoy PQ16 after his ship, the *Ocean Voice*, had been hit and set afire during mass air attacks. "But this gallant ship maintained her station, fought the fire and, with God's help, arrived at her destination. We were all inspired," he added, "by the parade-ground rigidity of the convoy's station keeping, including the *Ocean Voice* and the *Stari Bolshevik* (Russian), who were billowing smoke from their foreholds."

A few convoys delivered their cargoes without incident, but for most of them the Murmansk run meant either going down in battle or fighting through with guns, seamanship, and devotion to duty. Almost every ship that traveled this route gave her crew plenty of thrills to remember. The first-trip Libertys shared adventures with ships that were old before the ugly ducklings were hatched. All of them had one common fault: they were too slow to outrun submarines.

Ships of the early convoys were usually too lightly armed to put up much fight against air attack, but they fought valiantly with what they had. The *Michigan* in PQ16 shot down two planes with her meager armament. Gunners on the *Expositor* blew the conning tower off a submarine. The *Steel Worker* struck a mine in Kola Strait. The ammunition-laden *Syros* was torpedoed and disintegrated in one terrifying blast. The *Bateau* was sunk in a running fight with German destroyers. During convoy operations, merchant ships and escorts shot down many enemy planes, but there was no way of establishing a final score. Escorts sank the German submarines *U88*, *U589*, and *U457*.

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Of all the convoys that made the Murmansk run, PQ17 has become the most famous—and with good reason. It consisted of 33 merchant ships when it left

Reykjavik, Iceland, on 28 June 1942, headed for the Denmark Strait, Archangel, and Murmansk.

Of the 21 U. S. ships, six were new Libertys: *Christopher Newport*, *William Hooper*, *John Witherspoon*, *Daniel Morgan*, *Samuel Chase* and *Benjamin Harrison*, all fresh from the yards. The others were American ships under the Panamanian flag, plus British, Russian, and Dutch ships.

At that time Russia was reeling before the German blitzkrieg, so PQ17 was loaded with strategic materials urgently needed by the Soviets—armor plate, steel, flour, canned goods, nickel, oil stills, aluminum, cordite, TNT, aircraft parts, guns and planes. Every ship carried a cargo worth a rajah's ransom.

For protection against attack by the German surface fleet, PQ17 had a heavy escort: the British cruisers *London* and *Norfolk*, and the U. S. cruisers *Wichita* and *Tuscaloosa*, a gesture of aid to the British and a token of camaraderie for the doubting Russians. The immediate convoy patrol included destroyers, corvettes, two antiaircraft ships, several armed trawlers, three rescue ships for picking up the crews of sunken vessels, and two submarines. A covering force, battleships HMS *Duke of York* and USS *Washington*, the carrier HMS *Victorious*, three cruisers and numerous destroyers, had been assigned to the general area over which the convoy was to travel, but they remained well beyond the 300-mile flight range of German aircraft.

This formidable escort did not deter the enemy. At 0230 on 4 July, a Heinkel torpedo-bomber eluded a hail of fire from the corvette *Palomaris* and torpedoed the *Christopher Newport*. The explosion blasted a big hole in the engine room, and the men on watch drowned. The survivors abandoned ship.

That evening, at suppertime, a flight of 24 twin-engine bombers attacked, winging in no more than 20 to 30 feet above the sea. Despite a curtain of fire, five planes managed to get in among the convoy to torpedo the British freighter *Navarino*, the American Liberty ship *William Hooper*, and the Russian tanker *Azerbaijan*. The *Navarino* and *Hooper* sank.

Soon after that the convoy commodore hoisted an astonishing signal: "Scatter fanwise. Proceed to destination at utmost speed." Some of the captains could not believe the order and requested a repeat, but there had been no mistake. The escort had been ordered to abandon the merchant ships and their precious cargoes. Each vessel was to proceed independently and the devil take the hindmost.

Long afterward, the mystified skippers learned the reason for their abandonment. The British Admiralty believed that the German battleship *Tirpitz* and

battlecruiser *Scheer* had left their Norwegian bases to intercept PQ17. Scattering the convoy was the best, but tragic, alternative to having the Germans pounce on all the ships in one compact group, a target which their big guns would have eliminated in short order. The cruisers were withdrawn to keep them from being part of the expected sacrifice. The USS *Washington* and HMS *Duke of York*, with the *Victorious* and the cruisers, were not brought forward for fear they might be sunk by planes or submarines, thus freeing the German fleet for raiding operations in the North Atlantic. Since the main hope of eliminating the German battleship threat was through a decisive surface action, such timidity in refusing to employ *Duke of York*, *Washington*, and *Victorious* has been questioned in the years since. But cold facts at the time dictated the necessity of hazarding merchant ships rather than battleships and cruisers. The scattered convoy, as it turned out, only became easier victims for planes and submarines, and by 7 July, 18 freighters and 100,000 tons of cargo had been sent to the bottom.

The *Daniel Morgan* and the American freighter *Fairfield City* were making for Nova Zembla when Junkers bombers attacked and sank the latter. During this attack, nine sticks of bombs fell around the *Morgan*. Despite the fact that her 3-inch gun crew had been at battle stations for more than 24 hours without rest, they splashed two of the attackers. But many near-misses ruptured a number of hull plates and the *Morgan* was taking water fast. The crew abandoned ship, after which a submarine torpedoed her and she went down. The U-boat surfaced and gave the crew a course to steer to the nearest land. They were soon picked up by the Russian tanker *Donbass* and helped man the guns on that ship, shooting down one more bomber before they reached the White Sea.

As the remnants of PQ17 limped on, German attacks continued. On the afternoon of 5 July, the radio operator of the *Samuel Chase* logged these transmissions on the progress of the battle:

> Unidentified ship: "Two subs attacking."
> SS *Washington*: "Being dive bombed."
> Unidentified ship: "Have just been torpedoed."
> Unidentified ship: "Attacked by seven planes."
> *SS Daniel Morgan*: "Under heavy attack."
> *SS Pan Kraft*: "Under attack by aircraft."

On 10 July, while making a last-leg dash from Nova Zembla toward the White Sea, the *Chase* was attacked by six Junkers 88s. According to her log not all the fighting was done by the Germans:

> Received six near misses within 60 yards of the ship. Snapped steam lines to main engine and auxiliaries. Ship lay dead in water. Compass knocked from the binnacle. Taken in tow by corvette at 1534 hours. Planes over again. Dive bombers driven away by ack-ack. Two shot down.

Of PQ17's original 33 ships, only 11 finally delivered their cargoes. Of the six Libertys, only *Samuel Chase* and *Benjamin Harrison* reached Murmansk. As Churchill so aptly put it, PQ17 was "one of the most melancholy episodes in the whole of the war." Regrets over errors in judgment could not bring back the ships, the men, or the vast amount of cargo sent to the bottom with the unprotected ships of this unfortunate convoy, but the Admiralty vowed that no such disaster would befall the next convoy—PQ18—to make the Murmansk run.

That fleet of 39 merchantmen left Loch Ewe, Scotland, on 2 September with one of the heaviest escorts ever assigned to any convoy of comparable size throughout the war. The convoy included Liberty ships *Esek Hopkins*, *Nathaniel Greene*, *Oliver Ellsworth*, *Virginia Dare*, *William Moultrie*, and *Patrick Henry*. In addition to merchant ships, there were two fleet oilers, a rescue ship, and an oiler and three minesweepers assigned for transfer to the Russians.

For defense against submarines there were two destroyers, two submarines, four corvettes, three minesweepers, and four trawlers. Two antiaircraft ships steamed along inside the convoy columns for defense against air attack. Further protection against air attack or a sortie by capital ships was provided by the aircraft carrier HMS *Avenger*, escorted by four destroyers.

Fearing, and yet halfway hoping, that the Germans might hazard an attack on the convoy by a battleship or battle cruiser, the Admiralty had also given PQ18 an independent force of 16 destroyers accompanied by the cruiser *Scylla*, their prime mission being to attack and torpedo the *Tirpitz*, *Scharnhorst*, or *Scheer*.

Further protection against a heavy ship attack was a cruiser covering force that included the *Norfolk*, *Suffolk*, and *London*. Also available, in case of emergency, were the cruisers *Sheffield* and *Cumberland* and one destroyer, which were accompanying a convoy on a supply mission to Spitzbergen. The battleships *Anson* and *Duke of York*, escorted by the cruiser *Jamaica* and five destroyers, were deployed to the westward, safely beyond German bomber range.

As an added precaution, the Admiralty had ordered submarine patrols off the Lofoten Islands and the coast of Norway to spot any foray by the *Tirpitz* or her companions and, if possible, to torpedo them as they sortied.

Such formidable protection did not discourage the enemy. The German submarine *U589* torpedoed the *Oliver Ellsworth* on 13 September, and from then on the ships of PQ18 kept their men constantly at battle stations as they fought off day and night attacks by bombers and submarines.

Most ships on the Murmansk run carried TNT or ammunition, so their crews knew full well that a torpedo or bomb hit could send a ship and all aboard her to Kingdom Come in one terrible, all-consuming blast. So it was on 14 September. Every ship in the convoy was busy that day. One attack by 40 bombers sank eight ships. The American freighter *Mary Luckenbach,* carrying 1,000 tons of TNT, was hit by an aerial torpedo. Little was left of the vessel except a pillar of smoke when rescue craft arrived to look for survivors. According to the *Esek Hopkins,* the torpedo was dropped by a burning plane and the explosion of the *Luckenbach* destroyed that plane and another as well.

The blast effect shook the nearby American ship *Scoharie* as though she had been torpedoed, throwing men flat on the deck and hurling fragments of steel from bow to stern. On the *Nathaniel Greene,* the blast threw gunners from their stations, smashed crockery in the galley, broke doors, and showered the vessel with debris, including shell casings from the *Luckenbach*'s guns.

Captain George Vickers of the *Nathaniel Greene* had just swung his ship away from one of several aerial torpedoes when the *Luckenbach* blew up. He thought at first that his ship had been hit and ordered the crew to lifeboat stations.

Captain Richard Hocken of the *William Moultrie,* steaming in the same column immediately astern of the *Luckenbach,* said that when his ship passed over the spot, "there was nothing left of her at all—not even a raft—no wreckage, not even a match box; hardly a ripple on the surface of the sea."

With more luck than some and thanks to her captain's leadership and a courageous crew, the *Moultrie* came through the voyage safely. Hocken received the Merchant Marine Distinguished Service Medal and this citation:

> His ship, the S.S. *William Moultrie,* in a convoy which suffered heavy losses, fought through a week of continuous attacks by enemy bombers and submarines to deliver her cargo of war material to a North Russian port. In the course of the long, running battle, the ship was directly attacked 13 times and was credited with downing eight planes and with scoring hits on 12 others. During the first attack on the convoy, the *William Moultrie* distinguished herself by shooting down three torpedo planes and assisting in the destruction of six more. The

> following day her guns shot down four more of the attacking planes and damaged five. Later, after successfully repelling another attack by planes, four torpedoes were sighted heading for the ship. The guns fired on them, exploding one and the other three were eluded by skillful seamanship.
>
> Captain Hocken, master of a gallant ship and a gallant crew, exhibited qualities of leadership and high courage in keeping with the finest traditions of the U. S. Merchant Marine.

The *Virginia Dare* was a new Liberty ship on her maiden voyage, yet her green crew was credited with shooting down or assisting in the destruction of seven bombers. The *Nathaniel Greene* shot down several planes that day. Her Armed Guard officer, Lieutenant (junior grade) R. M. Billings, described the action:

> Upwards of 25 torpedo planes attacked the port flank of the convoy and some of them went for the aircraft carrier. At about 1355 a swarm of torpedo planes were sighted near the water in front of the convoy on the starboard side . . . the planes circled and came in directly at us, and we opened fire with everything we had . . . one plane crossing our bow received a direct hit from our three inch gun and crashed in the water. Two more planes were shot down by our machine gun fire as they went down the port side and another plane was shot down on the starboard side. The planes were so close you couldn't miss with a machine gun.

Convoy PQ18, after fighting nearly all the way, arrived at its destination on 21 September with 20 ships. Planes and U-boats had sunk 13. Eight American ships went down—the Liberty *Oliver Ellsworth*, and the *Kentucky, Mary Luckenbach, Oregonian, Wacosta, John Penn, Africander*, and *Macbeth*, an American ship flying the Panamanian flag. The convoy paid a heavy price in ships and cargo, but it also exacted a heavy toll from the enemy that, along with urgent demands upon the Germans for more aircraft elsewhere, discouraged further mass air attacks against heavily protected Murmansk convoys.

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Getting to Russia was only part of the job. Some ships spent so much time waiting to unload in the crowded ports that the crews began to feel like Soviet citizens. The crew of the *Yaka*, at Murmansk, sweated out 156 air raids while

off-loading cargo. The *Ironclad* ran aground at Archangel and was given to the Russians. The Libertys *Thomas Hartley, Francis Scott Key,* and *Israel Putnam* spent nearly eight months unloading, and endured many air attacks. *Hartley* was credited with three kills. The *John LaFarge* and *John Ireland* also shot down enemy bombers. Men learned enough Russian to ask, "How about the next dance?" or "Do you have a husband?" They hitchhiked around the forbidding countryside and some managed to get as far as 200 miles inland before being escorted back to their ships. Finally, in September 1943, the five Libertys steamed down Kola Strait and headed for home.

After the heavy losses of convoys PQ17 and PQ18, it was decided to try to sneak some ships through unescorted. The Liberty ships *Hugh Williamson, John H. B. Latrobe, John Walker, Richard B. Alvey,* and *William Clarke* were dispatched from Iceland in this fashion in October and November of 1942.

The *William Clark,* with a cargo of planes, tanks, auto tires, ammunition, and a crew of 71 men, was an easy mark for a waiting U-boat shortly after noon on 4 November. The sky was overcast, with a moderate sea running. Visibility was seven miles. The first torpedo hit amidships, flooding the engine room. The order was given to abandon ship, and after the lifeboats pulled away, two more torpedoes broke the vessel in two and sent her to the bottom. The *St. Elstan* and the *Cape Pallister* picked up the 41 survivors.

Of 13 ships that were sent off independently to Russia in the fall and winter of 1942, three turned back, four were sunk, one was wrecked, and five arrived safely at Murmansk. Out of 23 ships that sailed independently from Murmansk for Iceland, only one was sunk.

Another epic voyage was made by the *Richard Bland,* a new Liberty that sailed from Philadelphia on 1 May 1942. She left Halifax on 14 May in a 42-ship convoy for the United Kingdom, but with nine other ships, broke off from the main convoy ten days later enroute for Iceland, assembly point for the Murmansk convoys.

In Iceland the *Bland* swung at anchor for a full month until the high command had made up its mind about sailing another Murmansk fleet. On 27 June she left with PQ17, ran into fog, hit some heavy ice, stove in the forepeak, then ran aground on rocks. Towed to Reykjavik, she spent several weeks discharging cargo and undergoing temporary repairs. Then she sailed to Loch Ewe, Scotland, to discharge cargo, have her hull repaired, and load the cargo again. She finally reached Murmansk on 27 December.

On 1 March 1943, the *Bland* left Russia in convoy JW51A, which included

J. L. M. Curry and *Richard Bassett.* At 0927 on the morning of 5 March, the American freighter *Executive* and the *Bland* were both torpedoed by a submarine. *Bland* dropped out of the convoy but for some reason the U-boat failed to finish her off and she rejoined just in time to help fight off an attack by a dozen Heinkel 111s. A stick of four bombs missed the *Bland* by a few skips and a jump.

The next night a heavy gale with 40-knot winds scattered the convoy and by dawn *Bland* had lost it completely. The bridge steering gear went out and crewmen struggled to keep on course with emergency steering from the after steering platform. The heavy weather continued for several days.

On 10 March, in intermittent snow squalls, poor visibility, and heavy seas, lookouts sighted a submarine periscope astern and seconds later a torpedo exploded in number four hold. Before the stern gun could be swung onto the target, thick snow obscured it. Another torpedo just missed the stern.

Expecting the submarine to try again, the captain decided to abandon ship by lowering the two boats on the windward side, and bringing them along the leeward side. But in the heavy wind and sea the men lost control and the boats, each with four men on board, disappeared in the driving snow.

There were not enough boats left for the 60 men still aboard ship, so the captain announced that some would have to remain aboard with him, hoping that the convoy escorts would answer their SOS. "I don't think she'll sink unless they put another torpedo into us," he said. A few minutes later the German submarine did exactly that.

Navy Lieutenant William A. Carter, a passenger, saw the torpedo coming.

> When it hit we were surrounded by flames and water poured down on us. We [Carter and Ensign E. J. Neely, the Armed Guard commander] made our way to the boat deck and I ran through a sheet of flame to the port side, then down a ladder to the main deck. The boat [lifeboat] came past and I jumped in and managed to hang on, though I had my leg caught between the ship's side and the boat.
>
> I struggled to get the boat clear of the ship in heavy seas. Two men were holding on to the side of the boat by me and I tried to get them into the boat but their clothing was so heavy and the boat was so crowded that three of us were unable to haul them over the side. We held on to them as long as there was any use to hold on to them.
>
> Ensign Neely jumped over the side. The third mate and the third engineer reached for him and grabbed him but he was unconscious and couldn't help himself. They lost him.

Soon after this, the ship broke in two just forward of the bridge; the stern section sank in a few minutes, the forward half floated free.

Carter's lifeboat was so crowded there was only a few inches of freeboard—too crowded even to row. The third mate put out a sea anchor and organized a bailing squad that kept the half-swamped craft afloat until the wind and seas began to abate.

The men bailed all night, although several of them were nearly inert, apparently from shock. They signalled with flashlights, and after about ten hours they were picked up by the British destroyer *Impulsive.* Twenty-seven men were rescued from this lifeboat. Both of the boats that had been carried away from the ship prematurely were also picked up, with their eight occupants. The captain's boat was never found.

The *J. L. M. Curry,* which sailed from Russia with the *Richard Bland,* got caught in the same gale, on 6 March, and as she smashed into a heavy head sea there was a report like gunfire: the hull had cracked. An inspection showed ominous looking fissures in the deck forward and aft of number three hatch and at the after end of number four hatch. Captain Johnson decided to keep going but asked the convoy commodore to assign an escort to stand by.

Their situation was dismal at best. "Thick snow squalls. Heavy westerly sea," said the log. "Ship rolling and plunging." Shortly after midnight there was a new break on the starboard side of the afterdeck. The forward deck was opening up all the time, and the sea condition was becoming more serious.

Captain Johnson still hoped to get the ship to Reykjavik, but in order not to risk the lives of all on board, he decided to send away all but a skeleton crew and so signalled to the *St. Elstan,* a small British escort ship.

The next morning a new split ran through the starboard deep tank at the bottom of number three hold. By 0830 the *Curry* was "working very badly in all breaks."

The rest of the story was in the log of HMS *St. Elstan,* which picked up the narrative of events from the log of the sinking freighter.

> 0830 a.m. *J.L.M. Curry* prepared to abandon ship.
> 0915. First boat away. Picked up boat's company and proceeded to screen *J.L.M.C.*
> 1000. Two more boats picked up.
> 1100. Motor boat making three trips with remaining crew. Last boat alongside at 1112 with master on board.

> 1115. Opened fire on *J.L.M.C.* with four inch, using S.A.P. and H.E. Three shells in engine room on starboard side. Holes below water line. Spurted oil from fuel tanks. Three shells in number two hold; under forward gun and under master's accommodations, setting fire to latter. 1204. Opened fire on port side of *J.L.M.C.*, setting fire to bridge and midships accommodations. Ceased firing after dropping depth charges from starboard thrower to a position on port side amidships Ship last seen listing 30 degrees to starboard and sinking.

If Johnson had not decided to abandon ship when he did, it would have been too late, for in another twelve hours the storm had grown to a full gale, with violent snow squalls and high swells, conditions that might have made it impossible to get lifeboats away from the sinking ship.

Soon after the *St. Elstan* had picked up the *Curry*'s crew, the American freighter *Puerto Rican*, in the same convoy, sent an SOS. She had been torpedoed and was sinking fast. The *St. Elstan* was ordered to search for her, and passed through an extensive oil patch; found an empty and waterlogged lifeboat, but no survivors. It was learned later that the *Puerto Rican* had straggled from the convoy during the storm and was 25 miles astern when she was torpedoed. Only one boat could be lowered because the davits and ropes were coated with ice, but it could not be released from the falls and capsized, throwing its occupants into the sea. Eight men swam to a small raft, which was found by the *St. Elstan* two days later. By then, only one man was alive.

When the ship was hit, he had taken time to don one of the neck-to-toe rubber survival suits with which American ships on the Russian run were equipped. The suit saved his life, but his feet were frozen and had to be amputated in a hospital in Iceland.

While searching for survivors of the *Puerto Rican*, the *St. Elstan* took time to shepherd the Liberty ship *J. H. B. Latrobe*, straggling from the convoy with steering-engine trouble and a damaged propeller. That made a second close call for the *Latrobe;* running alone from Iceland toward Murmansk on 5 November 1942, she had been attacked by eight German torpedo planes. All eight torpedoes missed, because, perhaps, of a stream of fire from the Liberty's guns. After the planes left, the officers decided that, since their position was known, there would be another and probably heavier attack and that it would be folly to go on. The *Latrobe* returned to Reykjavik to await a convoy, a decision that saved some

7,000 tons of trucks, planes, heavy machinery, food, and guns worth many millions of dollars.

Another ship nearly done in by weather on the Russian run was the *James Bowie,* whose crew learned what it meant to fight for survival against the fury of the sea. The ship left Loch Ewe on 15 February 1943 in a convoy bound for Murmansk but had to change course four days later when "mountainous seas and strong winds" loosened the lifeboats and shifted the deck cargo.

Four days later there was "a loud jarring report" and the engine room reported an 18-inch-wide crack in the hull. Water was pouring into the engine spaces. All bilge pumps were cut in to handle the flood.

An inspection showed that the break extended from the main deck through the store room above the engine spaces and down into the engine room. According to the voyage report they were from then on their own:

> Convoy out of sight. Master ordered all ships personnel out on deck at lifeboat stations with lifejackets on. Deck department rigged heavy wire cables drawn taught with turnbuckles and winches to hold the break. Cable was drawn from bitt at number three hatch to bitt at number four hatch. We proceeded with all possible speed to Loch Ewe for temporary repairs.

A piece of steel was welded over the split and the *James Bowie* later went to Newcastle-on-Tyne for a complete repair job.

□

The German battleship *Scharnhorst,* which had lurked in Norwegian fjords for years threatening convoys, was finally lured to her destruction off the north coast of Norway in December of 1943. The bait was the 19-ship convoy JW55B, including *Will Rogers* and eight other Libertys, bound from Loch Ewe, Scotland, to Murmansk and heavily protected by cruisers, destroyers, and the *Duke of York.* This mighty battleship was screening both northbound convoy JW55B and southbound convoy RA55A, one or both of which, in the opinion of the Admiralty, would be spotted by German submarine or air reconnaissance and would be too tempting, under conditions of the winter Arctic darkness, for the Germans to resist.

Unaware of the presence of *Duke of York* and eager to smash convoy JW55B, the Germans dispatched the *Scharnhorst* from Altenfjord on Christmas Day.

U-boats and bombers shadowed the convoy in advance of the sortie but did no damage. The log of the *Will Rogers* for 23 December noted: "General quarters. All men to battle stations. Two enemy aircraft approaching on the port quarter. Escort vessels sent up effective barrage, driving planes off."

On 26 December, the British cruiser *Belfast* made radar contact on the *Scharnhorst* and alerted the *Duke of York*, still 125 miles away. The *Belfast*, *Sheffield*, and *Norfolk* and escorting destroyers stayed between the raider and the convoy, hoping *Duke of York* would close the gap before the *Scharnhorst*'s destroyer scouts sighted the merchantmen. The British cruiser fired on the *Scharnhorst* briefly, but the Germans, for some unknown reason, did not return the fire, and the cruisers were undamaged.

The *Duke of York*, making top speed in heavy seas, was headed on an intercept course for the *Scharnhorst*, although neither ship was aware of the fact at the time.

On the evening of 26 December, the *Duke of York* made radar contact on the *Scharnhorst*, returning to Norway after failure to find the convoy. Her protecting German destroyer had already gone home. Soon after this *Scharnhorst* was illuminated by a parachute flare from the *Duke of York* and the battle began.

For once Liberty ships were not in the fight, but some of them saw it. Ensign John W. Broderick, armed guard officer on the *Will Rogers*, watched from a distance, and saw gunfire and parachute flares on the port beam. He knew that he was seeing a surface battle between the escorts and enemy warships.

Aboard *Will Rogers* and the other merchantmen, sailors watched the distant flashes of the guns, hoping the enemy ships would not break through and run rampant through the "sitting ducks." For two hours the orange-red streaks of flame lit the sky, while the freighters rolled and plunged onward toward Murmansk and the *Scharnhorst* tried to evade the 14-inch shells of *Duke of York*. After 77 rounds had been fired, British Admiral Fraser ordered the battleship to cease fire and sent the cruisers *Belfast* and *Jamaica* and four destroyers in to finish off the crippled *Scharnhorst* with torpedoes. Only 36 men of her crew of 1,940 were picked up by the British. Not one of her officers survived.

□

Although the *Scharnhorst* was gone, there was no pause in German attempts to break up the Murmansk convoys. A submarine put two torpedoes into the *Penelope Barker* enroute from Iceland to Murmansk with convoy JW56A on 25 January 1944. The second explosion blew the 20-millimeter guns out of the tubs, knocked down the stack, blew two lifeboats overboard, and partially destroyed the bridge. The ship was loaded with tanks, locomotives, and flat cars, and went down in ten minutes. Survivors were picked up by HMS *Savage*. Eleven men were killed.

The British Liberty *Samsuva*, in convoy RA60 from Archangel to Scotland on 29 September 1944, swerved to avoid hitting the *Edward H. Crockett* when she was torpedoed by a German submarine. A minute later the *Samsuva* was also torpedoed, and all the black gang on watch were killed. The ship was then sunk by the HMS *Corsica*. Survivors were taken aboard the *Rathlin* which, with the *Zamalek*, rescued hundreds of men from torpedoed ships in the North Atlantic and Arctic. The *Crockett*'s crew, except for one man killed in the engine room, were also picked up by the *Zamalek;* the ship was sunk by friendly gunfire.

Planes and submarines haunted the convoys almost to the last days of German participation in the war. The *Horace Gray*, carrying 7,500 tons of potash, was torpedoed on 14 February 1945 at the entrance to Kola Inlet. She was beached at Tyuva Bay, a total loss, but with no casualties. The *Thomas Scott* was torpedoed shortly after leaving Kola Inlet en route to Scotland in convoy RA64. The 40 Norwegian refugees on board, together with the merchant crew and armed guard, were picked up by a British destroyer and were landed at Vianga, Russia. A Russian destroyer attempted to tow the ship but it broke up and sank.

A Russian salvage tug was successful in saving the *Horace Bushnell* after she was torpedoed near the White Sea on 20 March 1945, in convoy JW65. The engine room was demolished by the explosion, and five men were killed. The *Bushnell* looked more like a submarine than a ship by the time the tug beached her at Tereberski, and she probably did not sail again, although there was one report the Russians had salvaged and repaired her.

In the same convoy the *Thomas Donaldson*, carrying ammunition and locomotives, was torpedoed with the loss of four men. Escorts took her in tow, but she sank a few hours later.

□

The story of the Russian run had a fitting finale in the last voyage of the *Henry Bacon*, which left the White Sea in February of 1945 in the 34-ship convoy RA64. On board were 35 Norwegian refugees—men, women and children—who had fled to Russia during the Nazi invasion and were being sent to England.

The convoy cleared North Cape and started down the Norwegian coast. On 18 February a violent storm with 60-mile winds whipped up turbulent seas and completely scattered the ships. By the time the escorts had rounded up the strays, several freighters had been torpedoed by U-boats. The British escort sloop *Bluebell* was sunk by *U711*, with only one survivor.

Four days later another storm scattered the fleet again. Some ships hove to, while others ran before tremendous seas that rolled a British escort carrier 45 degrees and nearly sent her aircraft over the side.

Again the escorts rounded up all the strays except the *Henry Bacon*, which had lagged some 50 miles behind because of trouble with the steering engine. It took the engineers several hours to make repairs, and by the time the ship resumed her course she was a tempting target for planes or U-boats. Captain Alfred Carini back-tracked up the course for an hour hoping to find the other ships, but with no luck. By that time he had not slept for 45 hours and kept awake by pacing the bridge and drinking black coffee.

At 1415 on the afternoon of 25 February, the lookout in the crow's nest reported: "Airplanes. Sounds like a lot of them."

Even against the whine of the wind, Carini could hear them and sounded the general alarm. Men tumbled out of bunks and grabbed helmets, lifejackets, and extra clothing for protection against the wintry blasts of wind on the open deck. The steward mustered his cooks and messmen to break out bandages, splints, and anesthetics, covering the wardroom tables with blankets in preparation for battle casualties. Below decks, all the black gang could do was listen—and wait.

Gunners jerked the canvas covers off the guns none too soon. Big, black Junkers 88s broke out of the overcast, flying 30 feet above the wave tops. There was no need for the Armed Guard officer on the bridge to give the order to fire. Every gun that could bear went into instant action.

Carini counted 23 planes. Twenty-three bombers against one ship. Heavy odds for even a cruiser or a battleship. Aircraft carriers had been sunk by fewer planes than this. There was no nearby ship the *Henry Bacon* could call for help.

A bomber dropped a torpedo 500 yards away on the port quarter, and Carini

yelled, "Hard a port!" The helmsman spun the wheel hard over and the torpedo just missed.

Another plane started a torpedo run several hundred yards off the bow and the 3-inch gun blew it to bits. Pieces of flaming aircraft fell into the sea just off the bow.

Another plane flew into a wall of 20-millimeter shells which sliced it in two and sent the pilot's compartment cartwheeling into the sea.

So many planes had only to persist to be successful against one ship. A torpedo finally hit the *Henry Bacon* in number three hold on the starboard side, forward. The vessel shuddered as a 50-foot column of water shot up above the bulwarks. The spray was still falling along the deck when the second torpedo hit. Carini ordered abandon ship. If he waited any longer, a third torpedo might send the vessel down without a chance to launch the boats.

"Refugees first," he called to the mate. "Get the passengers on the boat deck as fast as you can. Tell them to bring lots of clothes."

The German bombers, seeing that their target was doomed, broke off the attack and withdrew, with one skimming the wave tops as black smoke poured from an engine.

The *Bacon* carried four lifeboats, plus a number of rafts, but men on a raft would have little chance of survival in winter seas. Carini maneuvered the ship to provide a lee for lowering the boats. They would be lucky to get even two boats safely into the water.

The first boat lowered away successfully and pushed off. When the second boat was safely overside, Third Mate Joseph Scott counted the passengers. "I can take six," he shouted. "Six more . . . and hurry." Several merchant crewmen and Navy gunners climbed down into the boat as it rose on the crest of a wave. The ship was settling and waves were breaking over the bulwarks.

Chief Engineer Donald Haviland looked up at a young Navy gunner on deck. The boy couldn't have been more than 17 years old. "Put me alongside," he said to the third mate. "Let that kid have my place. It won't matter so much if I don't get back."

Haviland climbed back to the deck while the sailor scurried down the scramble-nets into the boat, which pulled quickly away. The ship was going down soon, and they didn't want to be sucked under with her. A raft with several men on it bobbed some distance away. The wind and waves were taking the lifeboats away

from the ship, and no pullling on the oars would bring them close enough to pick up the men on the raft.

Men in the boats saw Haviland, Boatswain Halcomb Lammon, and several other seamen on the foredeck, probably making a raft out of dunnage. Captain Carini waved from the bridge. The boats drifted off into the mist as the *Henry Bacon*, her ensign snapping proudly at the gaff, settled slowly beneath the sea.

By the time convoy escorts arrived to look for survivors there were only a few boards and crates to mark where the *Henry Bacon* and 22 of her men went down.

Said the Maritime Commission: "It was a splendid defense by a merchant ship against overwhelming odds and of discipline of the highest order amongst the ship's company." The men of the *Henry Bacon* had added a gallant chapter to the history of the American merchant marine.

But the heroic deeds of ships and men that braved the hazards of the convoy routes to carry aid to Russia in World War II were soon forgotten in Murmansk. Twenty-five years later, there is not a single testimonial there to the Allied merchant seamen and their naval comrades who died to keep supplies flowing to the Russian front. The Murmansk museum contains many relics of World War II, but no remembrance whatsoever of the wartime convoys or of the 97 ships and countless men lost in making the hazardous Murmansk Run.

THE BATTLE OF THE ATLANTIC

The Battle of the Atlantic was the longest and most bitterly fought battle of World War II. It started on 3 September 1939, when a German submarine torpedoed the British liner *Athenia* less than 12 hours after the outbreak of hostilities between England and Germany; and it ended on 5 May 1945 when Grand Admiral Carl Doenitz sent a signal ordering all U-boats to cease combat operations and return to Germany. For Britain the message ended 68 months of unremitting warfare on the North and South Atlantic sea-lanes.

With England a besieged island completely dependent on ships for all imports of food, oil, and U. S. aid, it was apparent that the Atlantic was to be the battleground on which the war could be won or lost. Doenitz declared in 1940 that "the U-boat alone can win the war." His prophecy came close to fulfillment. Mass production of American Liberty ships, plus the development of antisubmarine weapons and tactics such as hedgehogs, hunter-killer groups, and radar, which the Admiral had not foreseen, were the factors that decided this sea war in favor of the Allies. But for many months in 1942 and 1943 it was "touch and go." The disasterous month of May, 1942, marked the peak of Germany's war on Allied

shipping when U-boats sank 125 ships of 600,000 gross tons in all areas of the Atlantic.

"The Battle of the Atlantic," according to British Prime Minister Winston Churchill, "was the dominating factor all through the war. Never for one moment could we forget that everything happening elsewhere, on land, sea, or in the air, depended ultimately on its outcome, and amid all other cares we viewed its changing fortunes day by day with hope or apprehension."

In his book, *Grand Alliance*, Churchill wrote that American presidential adviser Harry Hopkins, in summing up the feeling of American war leaders, predicted that the Battle of the Atlantic would be the "final decisive battle of the war." It was the only battle in World War II, except for a brief foray by Japanese submarines against the West Coast, that brought the fighting to U. S. shores.

□

The initial U-boat onslaught in American waters was made by the *U66, U130, U106, U103*, and *U123*. Lieutenant Hardegen's *U123*, which had already sunk more than 100,000 tons of shipping before joining other subs for the American incursion, opened the offensive by sinking the British freighter *Cyclops* on 11 January 1942, about 160 miles south of Nova Scotia, with a loss of 87 men. The battle off the Atlantic Coast began 14 January when *U123* torpedoed the Norwegian tanker *Norness* 60 miles southwest of Montauk Point, Long Island. She next sank the British SS *Coimbra*. The tanker *Gulftrade* was sent down just 20 miles off Southampton, Long Island. The *U123* also sank the freighter *City of Atlanta* and tanker *Allan Jackson* off Cape Hatteras with large loss of life.

In ten days these five submarines torpedoed 25 ships of 200,000 tons between Long Island and Cape Hatteras while meager sea and air defensive forces scouted the coast in a vain hunt for the enemy. Such unpreparedness would have been laughable were it not costing so much in ships, lives, and cargoes. The U-boats soon grew so daring that people on shore could see the smoke and flame of burning ships. Oil and flotsam from U-boat victims littered Atlantic beaches from New Jersey to Key West.

One of the first Liberty ships sunk by a U-boat was the *Thomas McKeen*, sailing, unaccompanied, from New York to the Persian Gulf, loaded with planes, tanks, machinery, and ammunition. She was torpedoed some 1,200 miles east of

Jacksonville, Florida, on 29 June 1942. The torpedo merely set her on fire, so the U-boat surfaced and put 57 shells into the vessel before she finally sank. Five men were killed. The survivors abandoned ship in three boats, all of which arrived safely at various Caribbean ports.

A good many ships went down in the battle of the Atlantic before the last Liberty was sunk. That was the *Cyrus H. McCormick*, torpedoed at noon on 18 April 1945, 68 miles off the coast of France. The *McCormick*, carrying 8,400 tons of locomotives, cranes, trucks, and other heavy equipment, sank in a few minutes with a loss of four merchant crewmen and two Armed Guard sailors.

Within a few weeks, after German submarines began operations on the U. S. East Coast, they moved into the Gulf of Mexico and the Caribbean, where crowded shipping lanes made for good hunting. Before the war ended, the count of American merchant ships sunk in the wide-ranging battle of the Atlantic reached 141 in the North Atlantic, 78 along the American coasts, and 27 off the Normandy beachhead. An additional 122 were lost in the Caribbean area. The submarine war ended nearly three years later when the last American victim, the Boston collier *Black Point*, was sunk by *U853* on 5 May 1945, just a few miles off Newport, Rhode Island. The collier lost a number of crewmen; the *U853* was hunted down and depth-charged by a large fleet of vessels and sank with the loss of her entire crew. The action was quite a contrast to the time in 1942 when coastwise colliers were torpedoed and there was no attempt made to find or sink the enemy.

Unlike other battles of World War II where opposing naval forces slugged it out with heavy guns, aircraft, and bombs in definite short, furious engagements, the Battle of the Atlantic was a never-ending series of minor skirmishes between hunter and hunted. And all too often, the victim never knew she was being hunted until it was too late.

The *Alexander Macomb* was on her way from New York to join a trans-Atlantic convoy at Halifax when a submarine sent her down the morning of 3 July 1942, with a cargo of tanks, planes, plane engines, and ammunition destined for the Russian front. Ten men were lost.

Despite an escort of two Free French frigates, the *George Thacher* was sunk by a U-boat on 1 November while en route from Charleston, South Carolina, to Freetown and Takoradi, West Africa. She carried a load of trucks, ambulances, road-building equipment, and gasoline in drums. Two torpedoes hit forward and aft, exploding the gasoline and setting the ship ablaze. Casualties included the

captain, first mate, and the Armed Guard officer, plus 18 gunners, merchant crew men, and Army passengers.

Such heavily loaded ships went down fast. The *Julia Ward Howe*, headed for North Africa with a high priority cargo of 60 medium tanks, straggled from convoy UGS4 on 27 January 1943, southwest of the Azores. A U-boat fired two torpedoes at her, missed with one but broke her in two with the other, and in five minutes the ship was gone, taking her captain and chief engineer with her. The submarine surfaced, questioned survivors in the two lifeboats and gave them a course to steer to the Azores. The U-boat's crew were in high spirits and the executive officer, in good English, told them they were the thirtieth ship this raider had sunk. The two lifeboats were picked up by the Portuguese destroyer *Lima* and taken to Ponta Delgada in the Azores.

At Ponta Delgada the second mate, who had been taken aboard the submarine for questioning, saw a familiar face on the street. It was, he later swore to American authorities, the U-boat skipper, in the uniform of a Portuguese Army officer.

The *Jeremiah van Renssalaer* was hit by three torpedoes and set afire early in the morning of 2 February 1943, en route from New York to England in convoy HX224. Two boats capsized on launching, and 46 out of the merchant crew and armed guard contingent of 70 men were lost. The *Renssalaer* burned and had to be sunk by gunfire from a convoy escort.

The convoy rescue ship *Accrington*, seeing distress signals astern of the convoy, raced back and found the *van Renssalaer* ablaze. In strong wind and heavy seas, the little British ship, with Captain A. W. R. M. Greenham in command, searched and found a lifeboat and two life rafts carrying the 24 survivors. Too exhausted and cold to grab lines thrown to them, these men owed their rescue to Captain Greenham's expert seamanship and the bravery of Able Seamen McIntyre and Thomson, who went overboard and secured lines to the survivors so they could be hoisted aboard.

□

March, 1943, was one of the worst months of the war with 120 merchant ships being sunk in the Atlantic, mostly by U-boats. Of this total 82 went down in the North Atlantic—a loss of 470,000 tons of shipping, a vast amount of food and war material, and hundreds of merchant seamen.

One of the March casualties was the *Wade Hampton*, which had dropped

behind convoy HX227 in heavy weather when a U-boat torpedo blew off her stern. Most of the survivors were picked up by HMS *Vervain*, but Able Seaman Rexford Dickey and Boatswain John Sandova were not seen in the darkness and drifted off in the night on board a small raft. Sandova died of exposure but Dickey, water-soaked and half-frozen by wind and spray, was determined to live. He kept moving his arms and legs while he clung to the tumbling craft, rubbing his feet when they became numb, talking, singing, and shouting to keep himself awake when he felt the pleasant drowsiness that presages death from the cold. His determination to live was rewarded three days later when HMS *Beverly*, the former American four-stack destroyer *Branch*, spotted what looked like a U-boat conning tower and was ready to open fire on it when it was identified as a raft. Dickey soon was picked up, wrapped in warm blankets, and given a shot of hot rum. Sandova was buried at sea.

The *Meriwether Lewis*, carrying ammunition and automobile tires, disappeared from the same convoy four days after the *Wade Hampton* was hit. "Torpedoed and presumed sunk at 62 degrees ten minutes north, 28 degrees, 25 minutes west," said the official report. A convoy escort searched for two days in an attempt to locate survivors, but found only a 30-mile-long line of floating tires.

Convoy HX228 was bound from New York to Liverpool in March, 1943, when submarines attacked. There ensued a battle within a battle that contained all the elements of exciting sea fiction, considerable general confusion, and a mass panic that was near comedy but ended in tragedy. On the dark, moonless night of 10 March, submarines were about and HMS *Harvester* managed to ram and sink *U444* but was badly damaged in the collision. Next, another submarine put torpedoes into the *William C. Gorgas*, which carried 900 tons of TNT. Amazingly, both torpedoes missed the TNT, but the engine room watch were all killed.

Fifty-one survivors from the *Gorgas* were picked up by the *Harvester*, which was then attacked by the *U432*. Damaged in her battle with the *U444*, the *Harvester* was unable to take evasive action and was torpedoed. She went down so fast that many men were unable to get topside and go overboard. This put the survivors of the *Gorgas* in the unenviable position of having been torpedoed and sunk twice in one evening.

The *U432*, which had been depth-charged by the Free French corvette *Aconit* during her attack on the *Harvester*, then suddenly surfaced. The *Aconit* opened fire at 7,000 yards, ran the submarine down as she dived again, dropped more depth charges, forced her to the surface once more, and then opened fire again

and sunk her. Then she rescued the survivors of the *Gorgas* once more. The score for the evening was two German submarines and two merchant ships sunk. Only 12 men from the *Gorgas* survived.

The next day, as waves ran 30 feet high, the *Henry Wynkoop* collided with an unidentified submerged object. The ship rolled far over to starboard and crewmen heard "a rumbling and roaring sound under the keel." Nothing was sighted afterward to account for the collision; it was just possible the ship had unwittingly added another U-boat to the roster of those that never returned from patrol and were listed as "lost from causes unknown."

As the *Wynkoop* slowed down while she was inspected for damage, some of the crew assumed she had been ordered abandoned. Disregarding the fact that there had been no such order from the captain, 33 of them lowered lifeboats in the stormy sea for a precipitous departure that was successful but left the ship drastically short handed. The *Wynkoop* got underway again and recovered eight of her men from one boat but had to go on without the rest. The corvette *K58* picked up 16 but went on about her duties without returning them to the *Wynkoop*. The British steamer *Stuart Prince* rescued five. The corvette *K57* picked up one man who had not waited for the boats but had jumped overboard and was still swimming. Three men lost their lives in the panic.

Astern of convoy HX228 came HX229 and HX122, eastbound on parallel courses and numbering 100 ships between them. In one of the most powerful and determined U-boat wolf-pack attacks of the war, at least 40 submarines harassed the convoys and sank 21 ships, including four Libertys, before they reached the protecting cover of antisubmarine aircraft 600 miles off the English coast.

The *Walter Q. Gresham*, carrying 9,000 tons of powdered milk, sugar, and other supplies, took a torpedo hit in number five hold, which blew off the propeller and left her helplessly out of control. Two lifeboats capsized in heavy seas. An unnamed but courageous Armed Guard sailor swam from the overcrowded raft on which he had taken refuge to an empty raft and helped to transfer ten men to it. This saved 20 who might otherwise have been lost.

The *James Oglethorpe* went down with a load of planes, tractors, and trucks and many of the crew and Armed Guard detachment. About two hours later, a submarine torpedoed the *William Eustis* but did not sink her. It was impossible to attempt a tow while the battle was in progress, so one of the escorts sank the *Eustis* by dropping depth charges close alongside. There were no casualties.

Convoys were often trailed by U-boats looking for "lame ducks,"—ships that

had dropped behind because of engine trouble—or for stragglers separated from the brood by fog or stormy weather, a frequent occurrence in the North Atlantic.

The *William Pierce Frye*, a lame duck in convoy HX230 from Halifax to England on 28 March 1943, was hove-to making engine repairs when two torpedoes missed her by a matter of feet. Repairs were hastily concluded and the *Frye* started off at top speed, with the submarine paralleling her course several thousand yards away. Heavy seas were running and this, plus evasive action, enabled the *Frye* to evade the U-boat, but the next night two more torpedoes hit her and set off the cargo of explosives. She sank so quickly there was time to launch only one lifeboat. Some men jumped overboard, climbed into an LCT that was being carried on deck and floated off when the ship sank and were picked up five days later by HMS *Schikuri*. Only seven men out of 64 survived.

The commodore of convoy HX230, on 31 March, radioed to Commander-in-Chief, Western Atlantic: "*W. P. Frye* torpedoed when straggling. Do not intend detaching ships to search unless situation improves. U-boats shadowing all last night in spite of sweeps. Straggler *John Eaton* rejoined." Stragglers and lame ducks had to take their chances; *Eaton* won, *Frye* lost.

On 5 April 1943 the *Joel Roger Poincett* helped to pay back the debt that many an American owed to the little British rescue ships which accompanied the North Atlantic convoys to save torpedoed seamen. The *Poincett* assisted HMS *Loosestrife* in picking up 129 survivors from the British *Waroonga*. The torpedo that sank *Waroonga* hit many hungry Englishmen right in their pantries, for she was carrying 8,360 tons of butter, cheese, and meat.

□

Another chapter in the Battle of the North Atlantic began on 11 April 1943. The brand new Liberty ship *James W. Denver* had straggled from her convoy in a heavy fog, then stopped when overheated engine bearings made it necessary to shut down for repairs.

While the black gang labored with sledges, calipers, and scrapers to repair the bearings and get going again, two torpedoes sent the ship down as though she had been scuttled. In the excitement, one lifeboat overturned and the men were spilled into the sea, but were hauled out again.

Somehow or other, all the deck officers wound up in the same boat, with the result that two of the boats had no one with any knowledge of navigation. To

complicate matters, all the boats were soon separated by heavy seas and never sighted one another again, but resourcefulness and determination carried all of them through their ordeal with the loss of only one life.

Deck Engineer Dolar Stone was in a boat carrying 18 engineers, stewards, and Armed Guard gunners, only two of whom knew anything at all about small boat seamanship. Although he knew more about deck winches and ship's gear than he did about small boats, Stone took command as being the man aboard with the most seagoing experience.

Captain Everett W. Staley gave each boat a course to steer toward the nearest land, and a last command: "Hoist sail and let's get going."

"There was some light-hearted joking at first," said Stone, "but all in all it was a solemn leave taking from the *James W. Denver*. We hated to lose our ship and especially to see her go down without ever having fired a shot from all those beautiful new guns."

On the third night out, the bow lookout on Stone's boat sighted a vague shape in the dusk and someone yelled "Destroyer dead ahead!" To attract attention, they switched on their life jacket lights. Almost before they realized what was happening, a submarine appeared directly across their course.

"It was a big one," Stone recalled, "and we were careening right down on to it." The lifeboat grated against the hull and a German officer shouted at them from the conning tower.

"Where are you from?"

"Brooklyn!"

The German laughed. "That's where the baseball comes from," he said in good English.

As *Denver* was stencilled on the lifeboat equipment, they answered up readily enough when the officer asked the name of their ship: "*James Denver*." The German laughed again so the men guessed this was the submarine that had sunk them.

"Well, well," he said. "You are from one of the new Liberty ships." A German sailor handed them a carton of cigarettes. From the bridge, the officer shouted a course for them to steer, and the U-boat moved off into the night on the hunt for more victims.

In another boat, some unidentified man, probably First Mate Andy Del Proposto, kept a log of their 23 day ordeal. Such chronicles are rare. This one is well

worth reading because it fittingly describes the fortitude and patience of men who waited out their fates for more than three weeks, and won:

> April 11: Ship hit at 5 p.m. Second explosion 9:40 p.m. Rough and large, choppy sea. Wind northeasterly all night.
>
> April 12: Lost sea anchor 11 a.m. Rig up new one and put over side 12:05. Mounting sea. Sea anchor out all night. Men living on one cracker, two ounces water.
>
> April 13. 6:00 a.m. Hoist sails. 6:30 a.m. Take sails down. Sea too rough. Put sea anchor out again. Boys feeling fair. Still living on two crackers, four ounces water. Found out had no flares. Cans empty. No chocolate in food containers. Drifting southwesterly. Out 48 hours.
>
> April 14. 5:30 a.m. hoist sail, heading south. Wind NNE. Medium sea and swell. Men living on two crackers, four ounces water. Sun came out for first time today. 9:45 a.m., chop sail. Sea too large. Put out sea anchor. Wind force 6. Lost sea anchor at 6:53 p.m. Had to rig up another from two oars. 9:45 p.m. cleared up a little. Hoisted sail. Head south. Wind during night. All men have wet clothes now four days.
>
> April 15. Day started clear. Sea moderate with westerly winds. Force 3. 7 a.m. set sail heading south by east. North wind. Sun out again and feels good. 11:30 pm. wind died down. Everything calm, put out oars. 3 p.m. wind sprung up from northwest. Force 3. Put up sail and made good time. Raining. Everything wet.
>
> Friday. April 16. Raining. All calm. Try to catch water. No luck. Went to three ounces of water, two crackers and pemmican also one malt milk tablet. 12 noon approximately 600 miles from coast. Try fishing. No luck. Fish all around. Won't bite. Air stirring a little. 5 pm. Breeze freshing to NNE. Making a little time. Sun out. Maybe we'll dry out. Everyone's clothes damp. Getting on everyone's nerves. All snapping at one another. Set regular watches. Five men to watch. 5:30 a.m. Men talking of food and water and what they like to have. Also talking of religion. Rain during night. Try to catch water. No luck.
>
> Saturday. April 17. Eight miles south of yesterday's position. Calm sea. Air stirring slightly. Might have to row. Back to two ounces of water. Havn't seen a thing in six days now. 10 pm started to row. Men got extra two ounces of water. 11 pm wind freshing to northwesterly. Quit rowing. Getting small sea. Up speed. Continued sailing all night on easterly course.
>
> Palm Sunday. Clear NWly breeze. Continued sailing easterly course. Men got four ounces of water but not eating much. 12 N. Still sailing easterly course. Small following sea. Making good time. 3 pm gave men extra two ounces water. Wind change to westerly. Have not see a thing

yet. Men feeling pretty good. Doing a little singing. Now and then a man is a little seasick. Have not eaten since in boat. Given extra two ounces of water. First ass't. and lieutenant pretty sick. Given extra water. Deck cadet feet swelling. Can't get in shoes. Clothing starting to dry out a little now, but with night everything wet and cold again. 11 pm continued on easterly course. 4 am rain squalls. Still heading easterly. Wind westerly. Following small sea.

Monday, April 19, Fresh westerly breeze. Force 3. Large following sea. Occasional squalls. Men growling now and then. Sea getting worse. Shipping water. 8 pm Took in sail. Wind change to northerly. Can only make leeway. 12 M. Cold and damp. Full moon. Jib up only makes leeway. Saw few birds today. Men got 4 ounces water. Must have 450 miles to go.

Tuesday, April 20. Bob has birthday. 27 years old today. Gave men six ounces of water. 6 pm moderate northerly sea and swell. Put up main sail. Can't seem to get clothes dry and makes men cold and snappy. Can't get civil answer anymore. 8 pm small northerly Sea and swell heading easterly. Second assistant pretty sick. Made 75 miles today.

Wednesday, April 21. Clear and calm. Wind mod. northerly. Heading southeasterly. Making fair time. App 400 miles to go. 6 pm. Clear, full moon. Occasional rain squalls. Making fair time.

Thursday, April 22. 6 am clear and bright. NW wind and mod. sea. Quite a sharp current southerly. Men singing a little and hoping to be picked up soon. 12 M. Wind NE and mod sea. Cold damp. Overcast.

Friday, April 23. Overcast. Beam sea. Fresh NE breeze. Not making any time. Men pray now before breakfast and after supper. Not a thing sighted as yet. Still have hope. Body starting to ache. Damp clothing. Can't keep them dry.

Saturday, April 24. Overcast and cloudy. Cold NE winds. Heading south. Tide to west. Large, rough, choppy, quarter seas. Shipping sea occasionally. Must bale frequently. Everybody's nerves on edge. Still living on six ounces of water, crackers and pemmican. Now and then men will talk of home and what they would like to be doing or different food and wine. Worst part is you can't lay out straight. Always cramped up. No wonder we ache.

Easter Sunday, April 25. First time and hope it is the last I ever spend Easter in a life boat. Not sure of your position or anything. Day started clear. Put up sail. Wind from east, force 3. Large swell. Shipping water occasionally. Heading south. 12 noon. Men got treat. Half can of pemmican, ten ounces water. Nothing in sight. Still have hope.

Monday, April 26. Heading south. Drift to west. Large mountain sea

and swells. 7 am lower sail. Shipping too much water. Drifting to west. 12 N wind much same. Hoist sail, head south again. Can't seem to get any easting at all. Dear God, how we pray for a ship to pick us up or for the sight of land. Men starting to lose hope now. Second assistant talking out of his head regularly now. Cut down on rations. Have enough to last 11 days reduced ration. Cold and damp. Can't seem to get warm. Most of men joints swelling. Rough beam sea all night. Force 3.

Tuesday, April 27. High mountainous beam sea. Wind northeasterly. Force 4. Shipping water. Temperature 72 degrees. Everything damp. 12 N. Cut down on rations again. Can't see anything. Must make food and water last. Try fishing. Nothing bites. Have no bait. Let's hope we see something soon. Men's feet swelling at joints and every word a complaint. Hoping to hit mainland or Cape Verde Islands. Strong westerly winds and sea. Small swell. Making fair time. Heading SE.

Wednesday, April 28. Daybreak clear. Nothing in sight. Hurley thought saw submarine but did not surface. Wind NE. Force 2. Small swell. Heading SE. Must have app. 150 miles to mainland. Taking one box crackers, two cans pemmican, eight ounces water for 11 men now. Making mash. Lets hope what we have left lasts till picked up.

Thursday, April 29. Daybreak clear. Had prayer and breakfast. Small sea. Easterly swell. Wind NE heading SE. Made app. 50 miles yesterday. Men starting to break. Sure wish I was in my ap't, with my wife and baby. Hope I can keep up my courage and stop thinking of home too much. Made fair time last night.

Friday, April 30. Daybreak clear. Plenty of hope left yet. Cut down to one can of pemmican, one box of crackers, eight ounces of water. Expect to see land sometime this week yet. Wind from E. Heading SE. small sea and swell. 12 N Took sight for latitude. Everything looks all right. About 75 miles to go if calculations right. Bound to hit coast this week. Wind change NEly. Second assistant very low. Small sea and swell.

Saturday, May 1. Second assistant passed away during night. Gave burial at sea this morning 7:20 am. Men feel bad. 12 N went in swimming for a bath. Water felt good. Wind force 3. Making good time.

Sunday, May 2. Daybreak cloudy. Wind force 2. Small sea and swell. Force 1, making little headway. 11:25 a.m. sighted plane. Sent out smoke bomb. Think we were seen. Sure felt good after 21 days to see something. Will know within 24 hours whether we were or not. If not, expect to see land tomorrow if calculations right. Wind from E. Making little headway.

Monday, May 3. Daybreak clear and calm. Drift SW. Losing quite a

bit of distance covered. Small sea and swell. Sight seven whales at 10:05 am. Close enough we could have hit them with a stone. Sighted raft at noon. Boarded it to look for food and water. No luck. Found some marine growth so ate that. No sign of life yet. Looks like plane did not see us yesterday.

Tuesday May 4 (position 21 degrees 55 minutes north, 17 degrees, ten minutes west). Sighted smoke on horizon, but too far away to signal. Makes one feel low to see help so near yet so far. Daybreak clear. Wind strong NE. Heading SEly. Sighted fishing vessel 10 pm. Sent up flare. They sighted us and picked us up. We were 30 miles from African coast. Fed us and wined us in style. Now heading for Lisbon. Will be there in five days. Treat us like gentlemen. Gave us clothes and washed ours. Fed us again. Gave up their bunks so we may sleep. They keep feeding us everytime we open our eyes. They really are wonderful people. They just can't seem to do enough for us.

Wednesday, May 5. Aboard the *Albufeira*. Daybreak clear. Making ten knots. Had fish for breakfast and soup and wine. Then a nap. Feel like a million. Now supper. Cabbage and beef noodle soup, beef and potatoes. Abeam Canary Islands now. Only three days to Lisbon. Had spot of tea before going to sleep. These men give you their bunks and sleep on deck. Too bad there is nothing we can do in return.

Friday, May 7. Breakfast coffee and sea biscuit. Had bath. Dinner fried fish and potatoes bread and wine. Supper fish chowder and rice, baked fish wine and bread. Tea before retiring. Eat, sleep.

Saturday May 8. 4 pm Casablanca abeam. 8 pm today ends clear.

Sunday, May 9. Passed Cabo de Sae Vicente.

Monday, May 10. Passed pilot boat at mouth of Tagus River and proceeded up river to Lisbon where we disembarked at the pier about 5 am amid many officials, police and a large crowd. After clearance with local officials proceeded at once to the British Hospital.

In the Captain's boat, there was a sextant but no mathematical tables, so he relied on dead reckoning, steering with a compass held between his legs. Several men tried to jump overboard—a phenomenon of human behavior in almost every lifeboat trip of any duration—but were restrained. When food ran out, they wondered if they would live to sight land again or if some passing steamer would eventually find only their mute skeletons.

The captain had a chart and each day's dead reckoning position provided a constant reminder of their progress and was a great morale builder. Sometimes the captain would strike up a song, and most of them would join in. He would

dole out the water with: "It's only water now, boys, but keep your spirits up and you'll be drinking champagne one of these days soon."

Finally, on 5 May, the twenty-fifth day after leaving the ship, they made land —the beach at Rio del Oro, West Africa.

They were so weak no one could walk. They crawled up the beach on hands and knees, exulting in just being on dry land, but their joy was considerably mitigated by the discovery that they had landed on a desert—no water, no signs of human life; nothing. After five days of blinding sandstorms and unrelenting bright sun, intensified by the burning sands, they might have died there had it not been for another German submarine.

In a strange paradox of war, a U-boat had been sighted and depth-charged offshore by British planes a few days before and on 10 May a plane hunting for evidence of this marauding German sighted the *Denver*'s lifeboat. Some hours later a patrol vessel, which was also hunting for the U-boat, landed several armed men who thought at first that the *Denver*'s crew might be German survivors. They were soon aboard ship and headed for a hospital, where all of them recovered from their ordeal. Hardy sailors, most of them went back to sea when they returned to the United States.

□

As Convoy HX332 was making a trans-Atlantic crossing in April of 1943, Seaman John W. Welch of the *James Jackson* saw a submarine surfacing about 5,000 yards astern. Gunners opened fire within seconds. Seven shots from the *Jackson* were short, but the eighth was seen to hit squarely at the base of the conning tower. Other merchant ships, as well as the escorts, were firing by that time, and some of the submarine's crew were seen crawling out of the conning tower and jumping overboard. The gunners of the *James Jackson* claimed credit for the kill—the *U175*—but credit for it was later given to the convoy escort, the Coast Guard cutter *Spencer*.

As convoy ON202 made its way from England to New York in September, 1943, the *Frederick Douglas* was lead ship in the port column. The morning of 20 September, a torpedo exploded in number five hold and the *Douglas* began to settle by the stern.

Seconds later, a torpedo struck the *Theodore Dwight Weld*, exploded the boilers, blew the lifeboats overboard, and broke the ship in two. Survivors

THE PACIFIC

The largest battleground of World War II was the Pacific Ocean, which spreads across nearly half the globe. There the United States Navy and the Imperial Japanese Navy fought the battles that made headlines: Coral Sea, Midway, Guadalcanal, Leyte, Okinawa. At the same time, in minor actions extending from Southern California to the Aleutians and from Australia to the Ryukyu Islands, torpedoes, bombs, and suicide planes left the wrecks of many merchant ships to testify to the widespread toll of war in that vast sea.

For the merchant marine, the sea war reached to the very shores of the United States when raiding Japanese submarines torpedoed or shelled several vessels along the West Coast. The tanker *Emidio* lost five men when she was shelled and torpedoed by the Japanese submarine *I8* some 18 miles off Crescent City, California, on 20 December 1941. She was the first ship sunk in American coastal waters in World War II.

The great American counteroffensive in the Pacific, involving incredible logistic support, would have been impossible without the use of a vast merchant fleet, a great percentage of which was composed of Liberty ships. By 1944 hun-

dreds of these ships were streaming across the Pacific, delivering millions of tons of food, ammunition, guns, and other military supplies. They took part in all the landings after Guadalcanal. Many Liberty ships and hundreds of merchant sailors were lost getting their cargoes across that vast ocean area.

The first Liberty ship sunk in the Pacific was the *John Adams,* carrying 2,000 tons of gasoline, torpedoed the night of 5 May 1942 near New Caledonia. "A rumbling explosion shook the ship," a survivor reported. "Lights went out. Things that weren't bolted down fell and tumbled all over the place." Five Navy gunners were killed. The rest of the crew, 45 in all, abandoned ship.

The next day a Greek ship found the *John Adams* still afloat and, hoping to tow her into port, sent a boarding party on board. They found the midships deckhouse gutted by fire and the ship's cat purring on the bow. After a heavy explosion in number three hold, they left as quickly as they could, and the ship sank soon afterward.

The next Liberty lost was the *William Dawes.* She was en route from Adelaide to Brisbane, Australia, on 21 July 1942 when a torpedo exploded in her after magazine, blew the stern off, killed three men, and injured four others. But she refused to sink until HMAS *Southhampton* sent her down with gunfire.

The *Samuel Gompers* was torpedoed by a Japanese submarine on 20 January 1943 near New Caledonia. That torpedo, too, must have hit the magazine in the stern; the after gun platform was under water in little more than a minute and within five minutes the *Gompers* went down. Heavy seas capsized two boats on launching, but one was righted and manned. All but one of the 16 men in the captain's boat were injured in varying degrees. Two boats reached New Caledonia after rowing and sailing for a week; one was picked up by *PT111* after two weeks.

On their return voyages, Libertys often carried raw materials for war production and civilian needs. The *Peter H. Burnett* was not long out of Newcastle, Australia, with 18,154 bales of wool and 123 bags of mail when, on 22 January 1943, a torpedo hit in number five hold. It blew the hatch covers off and threw bales of wool on the deck and into the sea.

All hands abandoned ship except for the Armed Guard officer, the Army communications liaison officer, two cadets, and the engineers, who remained aboard hoping to get a shot at the submarine. But the raider, probably assuming one hit would sink its victim, disappeared. The *Burnett* was towed to Sydney, where most of the cargo was salvaged.

Only a couple of weeks later, on 9 February 1943, the *Starr King* was en route to New Caledonia from Sydney when a submarine periscope was sighted, but it disappeared as soon as the guns were manned. After several hours, the gunners were relieved from battle stations and all hands relaxed. The following morning either the same submarine or another fired four torpedoes at the *Starr King*, two of which were hits. HMAS *Warramonga* tried to tow the vessel into port, but she gradually settled and went down in mid-afternoon.

The *William Williams* fared better on 2 May when a torpedo put a hole 40 feet long and 30 feet wide in her port side. The crew abandoned ship, but when the submarine did not come back to finish the job, most of them reboarded her, got up steam, and sailed her to Suva with the help of the USS *Catalpa*.

Just two weeks later, the *William K. Vanderbilt*, en route from Vila Efate to Suva, was hit by two torpedoes. Only one man was lost, although the submarine surfaced and machine gunned the lifeboats. Unlike other incidents of this kind, the machine-gunning seemed to be more a taunt than a deliberate attempt to eliminate survivors, for the submarine soon disappeared.

For some reason, Japanese submarines had numerous chances to finish off ships crippled by torpedo explosions but left without doing so, perhaps to conserve torpedoes, figuring the victim was a helpless hulk and would be of no further war use.

One such ship was the *Matthew Lyon*, torpedoed between Guadalcanal and Espiritu Santo. Despite a 35-foot-long hole in number three hold, the *Matthew Lyon* reached Espiritu Santo under her own power. There were no fatalities, and injuries were limited to a few cuts and bruises.

In a similar attack two days later, the *H. M. DeYoung*, en route to Espiritu Santo with road scrapers, cranes, trucks, and other heavy equipment, took a torpedo in the engine room that killed the watch below. She was towed to Nukualofa, Tongatabu, by the tanker *Quebec*.

A Japanese plane, one of three mistaken for friendly Navy torpedo-bombers, hit the *George H. Himes* at Koli Point, Guadalcanal, on 11 October 1943, while she was discharging cargo. The *Himes* was beached by the USS *Menominee*, and most of the cargo was salvaged. There was no loss of life. The *John H. Couch* was hit in the same attack.

Army commanders faced with severe logistical headaches fell in love with Libertys when they appeared in the South Pacific in 1942; so much so that they began commandeering them whenever they could for intratheatre, island-to-

island shuttle services. Some became emergency troopships, being equipped with field kitchens, trough latrines flushed by fire hoses, and not much more in the way of accommodations. Each ship carried 900 men, most of whom had to sleep on bare decks.

"Passage on a Liberty ship," an Army general stated, "serves well as preparation for the hardships that lie ahead." Or, as the troops were apt to put it, "You spend a couple of weeks in the troop compartment of a Liberty, and you'll fight anyone to get ashore!"

Despite protestations by the WSA, the Army always had a number of these ships on island shuttles; and had as many as 11 serving troop ships in January of 1943. Many more Libertys worked for the Navy, and dozens of them were commissioned in the Navy* as cargo vessels. One of these ships may have been the fictional USS *Reluctant,* made famous in the novel, *Mr. Roberts,* by Thomas Heggen. Ports in the Pacific were given secret code names, such as *Echo, Fold,* and *Epic,* which Heggen paraphrased most appropriately as he described the routine of a cargo ship in the backwaters of the war:

"For the most part, it stayed on its regular run from Tedium to Apathy and back, about five days each way. It made an occasional trip to Monotony. . . ."

While some cargo ships in the Pacific experienced brief moments of action, for most of them the war varied between Tedium and Monotony. Gunners on the *José C. Barbosa* would have welcomed the sight of a Zero to break the boredom of unexciting "milk-runs" to South Pacific supply bases. Her maiden voyage, starting at San Francisco, lasted nine months and took her to Espiritu Santo, Milne Bay, Buna, Longemak, Lae, Biak, Hollandia, and Seadler Island.

The maiden voyage of the *Benjamin Franklin* involved an uneventful delivery of 10,000 tons of bombs, fuses, rations, trucks, gasoline, road graders, flour, Army cots, asphalt, lime, and nitrate to Vila in the New Hebrides. She returned by way of Antofogasta, Chile, for a cargo of ore. The only break in the routine came when a fireman did not report on the 4-to-8 watch. "A thorough search was made," said the ship's log. "Various members of the crew were questioned as to when the man was last seen and why he might want to jump overboard. He was not found."

When it came to long trips, sailors liked to tell about a Liberty ship that hauled a cargo of barbed wire around the South Pacific for six months until, finding no

one to accept it, the disgusted captain finally headed back to the West Coast where it was discovered that the wire should have gone to Italy.

This story, true or not, was probably not greatly exaggerated. The *James Buchanan,* on her maiden voyage to the South Pacific in 1943, carried a deck-load of PT-boats, equipment for a complete PT base, and 200 men of a PT squadron, riding in troop quarters in number two hold. The cargo was consigned to Pago Pago, but no one there would accept it. Not intending to roam the South Pacific like the Ancient Mariner, the skipper had the cargo unloaded and piled neatly on the waterfront. Two years later, most of it was still there, eloquent testimony to the waste and confusion of war. No one ever asked him what became of it.

Some anonymous poet on the *James Buchanan* penned a tribute to the military supply confusion and titled it *The New Guinea Theme Song.*

Things ARE as snafu as they seem,
Confusion and chaos reign supreme,
So chuck it back aboard and we're on our way
To Manus, Finsch and Milne Bay.
Where we'll drop the hook and wait some more,
Maybe then they'll know the score.
But it's odds on end—ten to one at best,
That they're as screwed up as the rest.
And we'll sit around for a month or so
With our spirits drooping and our morale low.

But all was not boredom aboard the *Buchanan.* Early in 1943 she was unloading bombs and ammunition at Noumea, New Caledonia. As First Mate Harland Soetan remembered it, the dock was piled with ammunition when a sling load was suddenly ignited. It exploded, setting off a pile of charges for fragmentation bombs.

"I was standing on the dock when it started," he recalled. "Chunks of metal began zooming past me like a scrap iron barrage. I flopped down on the dock, expecting to be chopped up by flying steel. Navy longshoremen jumped off the ship into the water. A sailor was sitting on a staging overside of a ship next to us when a big piece of metal almost cut him in half."

Peter Tregeboff, the ship's purser, took a fire hose into a hold when fragments

of hot steel started a fire, and braved a hail of flying metal to let go all forward lines so the vessel could maneuver out of the dock into the harbor. Fortunately, the explosion was confined. There was no calamity such as that at Hells Point on Guadalcanal where she was scheduled to load ammunition a few days later. The ship arrived at Guadalcanal on the night of the explosion.

Explosions were not uncommon when ships were handling ammunition. The *Juan Cabrillo* was at the Nickle Dock, Noumea, on 1 November 1943, when ammunition exploded on the pier. Two of her Armed Guard were killed and three seriously wounded. Lieutenant (junior grade) Glen L. Davis, the Armed Guard officer, suffered a broken hip and other injuries.

Another ammunition explosion, far more spectacular and costly, rocked the San Francisco Bay area the night of 17 July 1944, as the Liberty ship *E. A. Bryan* and the Victory ship *Quinault Victory* loaded ammunition at the Port Chicago Annex of the Mare Island Navy Yard. There was an estimated 10,000 tons of ammunition in the ships or on the docks when a blinding flash filled the sky and two blasts shook buildings from Sacramento to San Jose. A plane flying 7,000 feet above Port Chicago was peppered by flying debris and made an emergency landing at Fairfield. Windows were knocked out 50 miles away. The town of Port Chicago, a mile away, was almost eradicated. In ten seconds the two ships, the dock, an ammunition train, a locomotive, and two Coast Guard boats vanished, and with them went 327 men. Only 25 bodies were ever recovered.

□

Typical of many another Liberty ship peregrination was the ten-month voyage of the *Clarence H. Matson*, which started from San Francisco in March of 1944. With Milne Bay, New Guinea, as a "home port," she shuttled to bases and forward supply areas all over the southwest Pacific. In another wartime snafu, the *Matson* unloaded a cargo at Hollandia and then picked it all up again on her next trip. More disgusted than the ship's crew were the sweating Army troops who had handled the same 6,000 tons of heavy cargo twice.

Wartime snafus did not end instantly the day the war ended, and the crew of the *Ada Rehan* spent eleven months learning this the hard way. The ship left San Francisco in August 1945, bound for New Orleans, but was diverted to Iquique, Chile, to load nitrates for Alexandria, Egypt. Before she reached Alexandria, she was again diverted to Tripoli, where she blundered into a minefield and was saved

only by a plane that spotted her predicament and guided her out. The captain had a nervous breakdown and turned the ship over to the first mate. At Port Said the crew refused to work but finally agreed to sail the ship on to Khorramshahr, Iran.

There they adopted a vodka-drinking ape named Chippy. A few days out, bound for Ceylon, Singapore, and Shanghai, three women and a young child were discovered on board, smuggled out of Iran. Relations between captain and crew reached the boiling point. Then Chippy disappeared, with the skipper blaming the crew and the crew blaming the skipper for such monkey business. By the time the ship reached Shanghai, nine men had deserted and nine aliens had been picked up along the way to replace them. From Shanghai, the ship sailed for New Caledonia, where she picked up 21 homesick soldiers who had been stranded there, and headed for San Francisco. But again she was diverted and wound up in New York instead, on 5 July 1946, after an 11-month voyage "to everywhere."

The *Uriah M. Rose* spent a year as an island-hopper and once at Biak waited five weeks to discharge cargo. No Japanese were ever seen, but an Armed Guard gunner shot a shipmate while cleaning a revolver and another was seriously injured trying to dissect a souvenir shell.

Another island-hopper was the *Moina Michael;* her maiden voyage out of New Orleans lasted nine months, and despite the fact that she went to Manus, Hollandia, Biak, Finschaffen, Leyte, Mindoro, and Luzon, her Armed Guard officer reported, almost regretfully, "no enemy action."

The *Velva Lockwood* was another Liberty that always seemed to just miss the action. In the invasion of Normandy she had to report "no contact with the enemy." Then she reached Leyte Gulf in April, 1945, and waited 33 days for orders.

□

Such inactivity, together with long, boring trips inevitably led to friction and general erosion in crew morale. The Armed Guard officer was taken off one ship because of his proclivity for fighting with the master, a rough-spoken "squarehead" who was a capable mariner but not very adept at shipboard diplomacy or wardroom etiquette. The Armed Guard officers, many of them young business executives and college graduates, were unable to understand the rough-hewn and often self-schooled type of prewar merchant ship master and this could lead to friction, especially when there was a complete lack of the battle action that most of them desired.

□

Pacific beachheads took a toll of 44 merchant ships, most of them Libertys, which were sunk by kamikazes, bombers, shellfire, or torpedo attack. Many others were seriously damaged but were not listed as total losses.

For the merchant marine, the Mindoro landings in the Philippines were the most expensive in terms of ships and men. More merchant mariners lost their lives at Mindoro, according to the War Shipping Administration, than did members of the Armed Forces taking part in the D-Day invasion.

A convoy that left Leyte on 27 December for Mindoro had two especially tragic and spectacular losses. A dive-bomber hit the ammunition-laden *John Burke*, and the ship disappeared in a blast so devastating that when the smoke cleared away there was not even a handful of floating debris to mark where the ship and her 68 men had been. The *Lewis Dyche*, also loaded with ammunition, was hit by a kamikaze at Magrin Bay on 4 January. The ship and her crew of 71 were completely disintegrated.

The *Francisco Morazon* was the only one of four Liberty ships in this particular convoy to make the trip without being sunk or damaged. Lieutenant John J. Hartley, the Armed Guard officer, credited their survival to the "unceasing alertness of my men and the wonderful cooperation from the merchant crew. We fired ten tons of ammunition, all of which the merchant crew passed to us. . . . The men never left their gun positions from the time we sailed from Leyte till we arrived off Mindoro 72 hours later . . . we knocked down six planes and hit three others."

Brigadier General W. C. Dunkel of the West Visayan Task Force commended Captain John J. Brady and the officers and crew of the *Francisco Morazon* for

"outstanding performance of duty. . . . The *Francisco Morazon*, with a cargo of bombs and other ammunition, maintained full efficiency and a well disciplined ship's crew and guncrew despite its perilous cargo."

At Mindoro the *Juan de Fuca* was fired at by Japanese surface ships, strafed by fighter planes, and blasted by an aerial torpedo. Captain Charles Robbins and his crew beached the ship before she sank, then helped to salvage the *John M. Clayton*, another Liberty that had been torpedoed and bombed.

The *James H. Breasted* narrowly missed being hit by fire from the same Japanese task force that shelled the *Juan de Fuca*, then was sunk in a bombing attack; but not before landing 600 Army troops without a single injury to passengers or crew.

In the same operation the *Hobart Baker* was sunk by an aerial torpedo while carrying a load of steel landing mats. The *Chief Charlot*, luckier, shot down a Japanese transport plane taking paratroops to Mindoro.

The *David F. Barry* escaped an ammunition explosion by the heroic action of 27-year-old J. F. Parker, an oiler. When fire broke out in a hold, presumably because of the carelessness of cargo-handlers, Parker took a heaving line into the hold and made it fast around an ignited smoke bomb so that the potentially explosive "fuse," laying among 25 tons of gelatin, percussion caps, and TNT, could be hoisted out and thrown over the side.

At Luzon, the *Edward N. Westcott* fired on a bomber headed directly for the ship and blew the plane to pieces, but the engine catapulted over the vessel, smashed two cargo booms, and finally crashed amidships. Six merchant seamen and seven members of the Armed Guard were wounded.

In mid-afternoon of New Year's Day, 1945, the *Floyd W. Spencer* was attacked by a torpedo-bomber, that dropped its torpedo at 1,800 yards. At 1,000 yards all of the ship's 20-millimeters that could bear opened up and splashed the plane. The torpedo missed by 20 feet. The *Gus Darnell*, not quite so lucky, was hit by an aerial torpedo but did not sink. She was patched up and became a floating storehouse for Army supplies in the Philippines.

Bad weather was welcome, in a way, because it kept the kamikazes at their home bases, but it slowed up the war in other ways. The *Juan Cabrillo*'s log noted that heavy swells in Lingayan Gulf made it difficult to handle cargo, and there were many days when it was too rough for landing craft to come alongside.

There were 500 Army troops and 2,500 tons of vehicles and gasoline in drums aboard the *Kyle V. Johnson* as she steamed toward Lingayan Gulf on 12 January

1945, in a 100-ship convoy about evenly divided between ships and LSTs. At 0130 the convoy was attacked by six or more planes, one of which crashed into the starboard side of the *Johnson* at number three hatch. The engine plowed through the hull-plating into a 'tween decks crowded with troops and thence into the lower hold.

Said a survivor: "There was a blinding flash and an explosion so heavy it blew the steel hatch beams higher than the flying bridge." The ship dropped out of convoy to fight the fire, extinguished the flames, and then rejoined the fleet, but with 129 men killed and many injured.

□

Far from the headline-making battles of the central and southwest Pacific, Liberty ships also helped fight a much lesser-known campaign of the Pacific war, the defense of Alaska and the recapture of the Aleutians from the Japanese. The war in the Aleutians had as much tedium and as many snafus as any other, but it went on in mists, fog, ice, cold, and howling williwaws and was overshadowed in history by the strategically decisive battles of Midway and the Philippine Sea.

Except for the occasional mention of Dutch Harbor, Adak, or Attu in war communiques, the Alaskan Theatre was as hazy in the minds of most Americans as if it was on the moon. And so it seemed to the thousands of GIs sent to the cold, wet, barren Aleutians, where the campaign ended with an almost comic opera invasion of an island where the enemy had decamped and disappeared. That dismal land, wrote Samuel Eliot Morison, "might well be called the Theater of Military Frustration . . . sailors, soldiers and aviators alike regarded an assignment to this region of almost perpetual mist and snow as little better than penal servitude."

The Alaskan run was no short haul. It was 1,700 miles and 8 days from Seattle to the closest port at Dutch Harbor—the same as from Halifax, Nova Scotia, to Kingston, Jamaica—and hundreds of miles more out to Amchitka and Kiska.

When the Alaskan buildup was accelerated in 1942, the territory had half a dozen ports capable of handling Liberty-type ships, and some of them were closed part of the year. Seward was the principal port. In the spring of 1943, the Army built a new port at Whittier on Prince William Sound, with a large pier to handle Liberty ships and a branch rail line to the Alaskan Railroad some 50 miles away.

Within a year this port was handling 55,000 tons of cargo a month. A dozen other new ports were built plus new or expanded facilities at Adak, Shemya, Amchitka, Massacre Bay, and Kiska. The Army built a breakwater and pier at Shemya that was handling 76,000 tons of cargo a month by 1944.

Port facilities for two Liberty-sized ships were developed at Amchitka, where the peak load hit 63,000 tons in September of 1943. By April of 1943, Adak was the busiest port in Alaska, handling as much as 130,000 tons of cargo a month.

A typical Liberty in the Alaskan shuttle was the *John Paul Jones,* which spent more than a year hauling thousands of tons of cargo to Kodiak, Ketchikan, Dutch Harbor, Seward, Woman's Bay, and Pleasant Island. The *Jonathan Harrington* became known as the "Kodiak Express," making many voyages to the inhospitable Aleutians and the Bering Sea, including one call at Point Barrow, the extreme northern tip of Alaska.

Another Liberty, the *Daniel L. Lamont,* logged more than a dozen trips between Seattle and Port Townsend, and northern ports of Seward, Skagway, Cordova, Dutch Harbor, Adak, Cold Bay, False Pass, Squaw Harbor, and Attu.

The inhospitable weather conditions in the Alaska run are shown by the log of the *Samuel D. Ingham,* operating out of Seattle in 1943.

> Feb. 10—Vessel rolling heavily. Wind force 6.
> Feb. 11—Snow squalls. Very rough sea. Wind force 7-8.
> Feb. 12—Wind force 7. Overcast with rain and rough sea.
> Feb. 19—Freezing weather. Snow storm.
> March 1—Rough head sea. Thick rain and mist. Very poor visibility.
> Mar. 26—Wind hauled from SE to SW, reaching hurricane force with rain squals. Reduced speed to 50 rpm. Driving rain and snow.

A particularly vicious storm in the Alaskan area proved what some people had claimed about Liberty ships—that the welding was not always of high quality and sometimes let a ship come apart at the seams—but the aftermath of the affair proved that welding was, on the other hand, the best way there was of putting her back together.

The *Alexander Baranoff,* delivered by Permanente Metals Corporation of Richmond, California, on 17 April 1943, was soon thereafter turned over to the Russians under Lend-Lease and renamed *Valeri Chkaluv.* She had made several uneventful trips between the West Coast and Siberia with food and war supplies when she was caught in a terrific storm. During the third day of the storm, under

the hammering of tremendous seas, a crack developed in the forward part of the ship and spread, foot by foot, until, after 48 hours, with a boom like the roar of a cannon, the *Valeri Chkaluv* broke completely in two.

All of the crew except one were in the after portion when the bow broke away. Another Russian ship, this one commanded by a woman, Captain Anna Schetinina, responded to the *Chkaluv*'s SOS, but huge seas prevented a rescue.

By the time a U. S. Navy destroyer and two tugs arrived on the scene, the two sections of the ship were still floating, ten miles apart. As the weather moderated, both ends were captured and towed to North Vancouver, British Columbia, where they were welded together. Then, as good as new, or perhaps even better, the ship went back under the American flag with her original name of *Alexander Baranoff* and sailed on through the war.

On 11 December 1943 the *Chief Washakie* was 10 miles off Cape Cheerful, in anything but cheerful weather—a northeast gale with 50- to 60-mile winds and seas as high as 40 feet. About 2215 what sounded like a heavy explosion startled all hands, and immediately the ship went down by the bow. First Mate Otto Karbbe rolled out of his bunk and ran to the wheelhouse.

"We discovered within a few minutes," he reported, "that the hull had cracked at number three hatch and in the 'tween decks below. There was a two-inch-wide crack across the deck from the hatch to the rail. When I went down the access hatch into number three hold to investigate I saw the deck beams cracked and sagging. I got out quick."

The crippled ship limped 30 miles into Makushin Bay, where SeaBees spent several weeks welding stiffeners over her ruptured plates so she could return to Seattle. Heavy seas soon broke the temporary stripping and she put into Dutch Harbor for more patching. Eventually, in Seattle, she was strengthened with longitudinal girders and heavier deck straps, and went on to become one of the most endurable of the Liberty fleet. In 1970, as the SS *Chena* of the Alaska Steamship Company, she was still operating to and from Alaska.

The winters of 1943 and 1945 were among the worst on record in Alaskan waters. It was common for ships to report winds of 75 to 100 knots and seas from 40 to 50 feet high. The *John P. Gaines*, on her second voyage, broke up about 40 miles south of Cherikoff Island on 27 November 1943 and went down with the loss of 11 lives. The *John Burke*, in the same area at the same time, experienced no trouble. That ship made nine voyages to Alaska; then, on her

10th voyage, to the Philippines, she was lost with all hands off Mindoro on 28 December 1944.

After the *John Straub* sank in Alaskan waters in April of 1944 with a loss of 15 men, there was a great hue and cry that the Liberty ship was a poor product of shipbuilding, although survivors reported that faulty construction "was not a factor in the sinking" and that, as a matter of fact, the sea was smooth and the night clear at the time of the accident.

Much of the criticism came from politicos and editors who didn't know a strake from a rudder post and who, indeed, probably couldn't distinguish a Liberty from a Victory or a C2. Their clamor was soon deflated, however, when an investigation revealed that the ship's loss was not, as first hastily assumed, caused by weakened deck plates and sea action, but rather the result of a violent underwater explosion.

□

Unlike the Germans who frequently offered cigarettes and sailing directions, the Japanese had a sadistic habit of harassing the survivors of torpedoed ships. The first vessel experiencing this savagery in the Pacific was the SS *Donerail*, a New Zealand-operated vessel flying the Panamanian flag, en route from Suva, Fiji, to Vancouver with a load of sugar and pineapple. The submarine that torpedoed her then surfaced and used its deck gun to send about 20 shells into the hulk while the crew and passengers were abandoning ship. Sixteen men were killed by this shelling and most of the rest were wounded. The surviving 24 set out in a riddled lifeboat for a 38-day voyage during which 16 of them died of wounds or starvation. Those who finally reached Japanese-held Tarawa were taken prisoner.

On 30 October 1944, the Liberty ship *John A. Johnson* was steaming from San Francisco toward Honolulu with food, explosives, and a deckload of trucks. That area of the Pacific was not considered particularly hazardous then, and the ship was running alone, although lookouts were posted and the gun crew was ready for action. The weather was clear, with scattered clouds, heavy swells and a three-quarter moon.

No one saw the submarine, or the torpedo that struck at number three hold. The ship was making a heavy roll at the time, and the explosion at the turn of the bilge was fatal. The crew abandoned ship, and as the last man left the ship she broke in two.

All hands escaped safely in two lifeboats and a raft. About half an hour after the ship was abandoned, the submarine surfaced and began shelling the two sections of the wreck, by then about a quarter of a mile apart. After a few rounds, the forward section blew up in a thunderous blast, with flames shooting hundreds of feet into the air. The after section was set on fire.

Finished with its target practice, the raider then turned on the lifeboats. One boat, with 28 men on board, was about 200 yards from the submarine when it surfaced. It was a big one—at least 300 feet long—with several American flags painted on the conning tower. The captain was dressed in a white uniform, and the crewmen were laughing and shouting as they fired into the wrecked ship.

When the submarine headed toward the boat, with the evident intention of ramming, the men jumped over the side and swam out of the way. A searchlight was turned on and several Japanese fired on the survivors with pistols and a machine gun. After the raider passed, the men could hear a number of their shipmates crying for help, but there was nothing they could do.

They climbed back into the boat, but jumped out again when the submarine made another try at ramming, the sailors shouting "Banzai!" as they went by. This time, however, there was no firing. When the submarine finally headed off toward the other castaways the men climbed back into the lifeboat, but several of them had been shot or drowned.

The raft, with 17 men aboard or clinging to grab-ropes, was silhouetted by the burning ship and provided a perfect target for the gunners on the submarine. A machine gun fired several bursts at it and the submarine tried to ram, but twice a heavy sea rolled up just in time to carry the raft free. The third time the submarine sank the raft. Three men were killed by machine-gun fire as it passed. Then, after one attempt to ram the other boat, the submarine disappeared into the darkness.

Survivors were spotted the next morning by a Pan American Airways clipper, which directed the USS *Argus* to the scene. Ten men were killed by gunfire or drowned during the night of terror.

□

Obviously, a ship alone in the empty ranges of the Pacific looked suspiciously on any other vessel appearing over the horizon. As the *Juan Cabrillo* headed from San Francisco toward New Zealand on her maiden voyage in October, 1942, lookouts saw "a large, suspicious-looking ship on the horizon." Lieutenant

(junior grade) William Canberry sent his gun crews to battle stations. There were tense moments, for German raiders were thought to be operating in those waters. Officers thumbed through their ship-recognition manuals, inspecting the ship through their glasses and trying to determine whether she was friend or foe.

And then as the gunners swung the 4-inch gun toward the target, the percussion hand-lever struck the telescope light switch and accidentally fired the gun. If there had been suspense before, there was twice as much in the following moments as all hands waited to see where the shell would hit. They were much relieved when, as the official report puts it, "the shell hit short and astern of the other ship, now some 8½ miles distant." They never did identify her.

While the toughest part of the Pacific War for Liberty ships was in Philippine waters, there were occasional actions in many other far-flung parts of that vast ocean. On Christmas Day of 1944, the *Robert J. Walker* was off the coast of Australia when a torpedo took off her propeller and destroyed the steering engine. The submarine, evidently chary of expending any more torpedoes than necessary, waited around for the ship to sink. When a second torpedo was seen about two hours later, gunners blew it up only a hundred yards from the ship. The submarine then tried a third shot that hit, despite a rain of 20-millimeter shells directed at it. The crew escaped without casualties and was picked up by HMAS *Quickmatch.* Despite two torpedoes, the *Robert J. Walker* did not sink and had to be sent to the bottom by the destroyer's guns.

For every ship that was attacked by planes or submarines, there were a dozen that uneventfully carried out their unromantic task of cargo delivery. The *Henry D. Thoreau* spent a year in the South Pacific under charter to the Australian government, running between Sydney and Port Moresby, Milne Bay, and other supply bases. She carried troops, bulldozers, gasoline, cement for airfield construction, cigarettes and beer. At one time, the *Thoreau* received 1,500 Australian troops right from the *Queen Mary* and carried them to New Guinea. Everyone of them was "a bloke from Tobruk," just back from three years of service in North Africa, and deserved a better fate than being crowded aboard a ten-knot Liberty ship for a slow trip to the jungles of New Guinea.

The *Stephen Crane* was the object of a mysterious air attack which no one ever explained. While at anchor at New Guinea, an airplane—apparently an American P38—approached the ship at low altitude. When the "friendly" P38 roared over the ship it dropped a bomb close alongside. Shrapnel from the blast killed an Army officer and wounded 24 men. All guns opened fire immediately

and sent the plane down in flames. There was no way of knowing whether they had shot down a confused American pilot, or an enterprising Japanese who had somehow "borrowed" a P38.

It was in New Guinea, too, that heroic action saved the *John C. Calhoun.* This Liberty was discharging ammunition into another ship that caught fire and became a roaring inferno. Flames leaped between the two ships and set the *Calhoun* on fire. Her crew braved the flames to cut the mooring lines, shifted the ship to a safer anchorage, and extinguished the flames before they could reach 300 barrels of aviation gasoline.

Many Liberty ships added dramatic sea rescues to their routine war work in the Pacific. The *Edwin T. Meredith* was one of several Navy and merchant vessels that answered the SOS when the troopship *Cape San Juan,* carrying 1,429 soldiers, merchant seamen, and naval gunners, was sunk. The *Meredith* picked up 443 men. Even a Pan American Airways clipper landed in the open sea to rescue 40 survivors.

Two Army airmen whose plane crashed in the western Pacific were saved by the *John Howard Payne.* The ship was 75 miles away when it picked up a radio report of the crash, but it hurried at top speed to the scene. After several hours of searching, flares and then a yellow raft were sighted. Although a high sea was running, the *Payne* picked up the two men, one injured, and radioed the freighter *Whirlwind,* also in the vicinity, which transferred two medical corpsmen to the Liberty to care for the fliers. Two other men in the plane were never found, although the *Payne* and other ships searched for many hours.

The Pacific was no match for the North Atlantic when it came to bad weather, but there were times when it kicked up its heels and belied its gentle reputation.

The *Henderson Luelling,* westbound in February 1945, ran into such a bad storm that all hands had to be called to secure the deck cargo. A wave tore the tail assembly off an airplane, threw it against Seaman Roy Snell, and broke his leg. Despite this injury, Snell crawled to a shipmate who had been pinned against the bulwark, freed him, and dragged him to safety.

□

Liberty ships saw their last action of the Pacific War during the invasion of Okinawa, where the Japanese launched hundreds of suicide planes at naval ships and transports in a desperate but futile attempt to delay the hour of final defeat.

At least 2,000 kamikazes, plus conventional bombers, attacked the invasion fleet, sinking 36 warships and damaging 368. A number of merchant ships were also sunk or damaged. Libertys helped to carry some of the 182,821 assault troops landed on Okinawa, plus a large share of the 746,850 tons of supplies and the 503,555 tons of vehicles.

One of these, the *William B. Allison,* was hit by an aerial torpedo while at anchor at Nakagusuku Wan, shortly after breakfast on 24 May 1945. The blast tore a hole 30 feet deep and 18 feet wide in the port side, demolished the machinery spaces and killed two men on watch below. A Navy gunner was killed and six crewmen injured. After temporary repairs made on the spot, the *Allison* was towed to Kerama Retto.

There were only 13 Navy gunners on the *Uriah M. Rose* when it arrived at Nagakusuku in May of 1945, but what they lacked in numbers they made up for in sharpshooting enthusiasm. With the help of the merchant crew, they shot down at least two enemy planes and claimed "assists" on six others.

On 3 June, the ship's gunners shot a wing off a kamikaze that was an estimated 2,000 yards away and headed straight for the ship. At one time during their stay at Okinawa, they manned their guns for 14 straight hours.

An interview with survivors of the *Josiah Snelling* made by Lieutenant E. M. Harris, Jr., USNR, described how she was crash-dived by a suicide plane at Nakagusuku on 27 May:

> Shortly before 2300 hours a Japanese plane was seen approaching from the North East, taking every advantage of clouds and haze for cover. Port .20 millimeters and three inch 50 aft gun opened fire. At about 2300 this plane broke through the overcast 5,000 feet off the port quarter. Two rounds of three inch 50 fire were seen to burst below the plane and between it and the ship. The plane winged over and dropped into a power dive directly for the midships house of the vessel. All guns except numbers one and five .20 millimeters firing. The attacking plane held a steady course for the ship's top deck. At 2301 it struck at number one hold, coming in at an angle between number two gun tub and the foremast. The plane sheared off numbers one and two port cargo booms and number two port mast stay of steel cable and demolished both forward winches. The plane then went through the deck plates at the after coaming of number one hold and exploded, bursting into flames on the cargo (sacks of cement) in the bottom of number one hold. The explosion blew the gunners out of numbers one and two .20 millimeter tubs down onto the main deck.

Miraculously, no one was killed in this attack, although the gunners could have touched the plane as it roared past them. About a dozen Navy men, merchant crewmen, and Army stevedores were injured.

The last Liberty ship damaged by the enemy in the Pacific War was the victim of an unusual and unexpected attack. The *Mary Livermore* was unloading at Nakagusuku the evening of 27 May, when lookouts saw a seaplane taxiing on the water for takeoff a mile or so away. It was reported to be an American floatplane of a type called the Kingfisher.

Perhaps two minutes later, the same plane was sighted in the air, headed straight for the ship. Before a single shot could be fired, it struck a boom, bounced off and crashed into a 20-millimeter gun tub on the starboard side, then caromed into the air and, with a roar of exploding fuel and flame, crashed into the chartroom and the captain's quarters. A bomb exploded and wrecked the bridge, lifeboats and accommodations on the boat deck.

Eleven men, including four of the Armed Guard, were killed and several were seriously injured in this strange attack. There wasn't enough left of the plane to determine if it really had been an American Kingfisher or a Japanese plane camouflaged to look like one.

After temporary repairs at Okinawa, the *Mary Livermore* sailed to San Francisco under her own power and continued a seagoing career that lasted 25 years. She later sailed as the *Concord*, *World Leader*, and *Myrto*, and finally went to the shipbreakers on Taiwan in 1968 as the *Pacmoon*.

□

Probably the most unusual cargo carried to a Pacific beachhead was delivered to Okinawa by the *William R. Davies*—a consignment of 2,500 homing pigeons and their Signal Corps handlers. The ship had plenty of other cargo, too, and it took 22 days to discharge it, during which time the crew went to battle stations 72 times and shot down one kamikaze, with another "probable." The records fail to show what happened to the pigeons.

The ship's most exciting moment came during a night air raid when the anchorage was blacked out and all hands were scanning the sky for suicide planes. Just as the first kamikaze reached the target zone, the deck cargo-lights were accidently flashed on, turning the vessel into a brightly lit target. The lights were

quickly doused, but not before some fumble-thumb on the ship was soundly cursed by all vessels in the vicinity.

Not long after that, the Pacific War was over. Japanese sea and air power was a thing of the past, and cargo lights bloomed out on cargo ships whenever and wherever they were needed.

As some of the hard-working Libertys then joined in the jubilant task of bringing the victorious troops home again, General Douglas MacArthur paid this tribute to merchant seamen in the Pacific war:

> They have brought us our lifeblood and they had paid for it with some of their own. I saw them bombed off the Philippines and in New Guinea ports. When it was humanly possible, when their ships were not blown out from under them by bombs or torpedoes, they have delivered their cargoes to us who needed them so badly. In war it is performance that counts.

NORMANDY THE BIGGEST BEACHHEAD

In the winter and spring of 1944, southern England became a huge armed camp and staging area for the most massive seaborne assault the world had ever seen, the Allied invasion of France. Operation Overlord, under the supreme command of General Dwight D. Eisenhower, was planned to land the First United States Army on "Omaha" and "Utah" beaches in Normandy. The invasion fleet of thousands of naval vessels, merchant ships, and landing craft carried out pre-invasion minesweeping, and shore bombardment, and the actual landing of an assault force of 176,000 men and 20,000 vehicles. The vast armada moved out of ports all along the English coast and first units appeared off the Normandy beaches early in the morning of 6 June. Among them were the ubiquitous Liberty ships.

The logistics involved were vast in scope. The tremendous job the merchant ships did in supporting the troops was a vital factor in making the invasion a success. Once ashore, troops needed mountains of ammunition, food, guns, and equipment to keep fighting. Hundreds of ships—a large number of them Libertys—maintained a supply shuttle between England and the French coast after the initial landings, and later to Cherbourg, Antwerp, and other captured ports as soon as they could be reopened. In the first 20 days after D-Day, the shuttle ships

delivered 189,000 vehicles and 1,703,000 men, plus food, fuel, shells, and other supplies of every conceivable description, from typewriters and telephones to bombs, beds and bandages. But no freighter could unload without harbor facilities, and all harbors on the French coast were held by the Germans. The solution, proposed by the British, was to build artificial harbors, called "Mulberries," protected by breakwaters called "Gooseberries."

The Mulberry artificial harbor was one of the most imaginative achievements in the history of the war. More than 20,000 British workmen were employed in building their components, and on D-Day a great fleet of towboats of many nationalities, escorted by ships of the Royal Navy, moved them the 100 miles across the English Channel. These prefabricated harbors consisted of a breakwater formed by sunken ships, 150 ponderous concrete caissons, and a series of floating piers connected to the shore by miles of floating bridges and roadways. It was estimated that 8,000 yards of breakwater blockships would be needed, so Allied merchant and naval fleets were scoured for vessels that could be expended for such use. Seventy-six ships, including seven Liberty ships, were selected for this important sacrifice. Four obsolete British warships were also sunk.

The blockships arrived at the beachheads at various scheduled times commencing on D-Day, took their appointed positions, and were scuttled by dynamite charges in the holds. The SS *James Iredell*, a veteran of the Mediterranean campaign, was one of the first. The *Matt W. Ransom* followed soon after, with German 88s trying vainly to send her down before she was properly positioned. The *Benjamin Contee* was also the target of 88s, but she was put in position by tugs, scuttled and sent to the bottom as planned.

Other Libertys used as Mulberries were the *Artemus Ward, George S. Wasson, George M. Childs*, and *James W. Marshall*. American ships so used also included several "Hog Islanders;" *Sahale, Kofresi, Alcoa Leader*, and *Exford*. Still other veterans of the prewar merchant marine, products of the world War I shipbuilding program, were the *West Nilus, West Grama, Courageous, Galveston, Illinoian* and *Robin Gray*. Two concrete freighters built at Tampa were consigned to the blockship line and sunk there on their maiden voyages.

Some 800 merchant seamen volunteered to sail the doomed blockships from English ports. As the Normandy beaches were protected by German mines, heavy artillery, and, supposedly, bomber fleets, it was the conviction of almost everyone involved in Operation Overlord that the Germans would make every effort to sink the blockships before they could be positioned and scuttled. Nevertheless, both Mulberries were completed in five days.

Another group of Libertys, called "accommodation ships," were loaded in the United States, hauled their cargo to England, then went on to France. The *Thomas Johnson* served as a Mulberry accommodation ship. The *George B. Woodward* so served at Omaha Beach, as the *Bernard Carter* did at Utah Beach. The *Eleazer Wheelock* became the base for the Naval Officer in Command at Omaha Beach, the *Thomas B. Robertson* served in the same fashion at Utah Beach.

Following the operation, Admiral Sir Bertram H. Ramsey, Allied naval commander-in-chief, commended the U. S. War Shipping Administration as follows:

> Operations in which 32 United States merchant ships participated have been brought to an extremely successful conclusion. This reflects the greatest credit to the officers and men who manned these vessels. Particular praise is due to the engine room staffs for their tenacity and devotion to duty; especially in the case of those ships which had to be positioned under enemy shellfire. The result of their efforts is already bearing fruit and the shelters they provided are of great benefit to the Army.
>
> It is requested that you will convey to all the officers and men concerned my high appreciation of the valuable services they have rendered to the Allied cause.

□

The English Channel was so filled with ships during the first few days of the invasion that one felt every ship in the world must be there. That was the way it seemed to Captain Heinrich Kronke, of the SS *Cyrus H. McCormick*, as he described the scene.

> The Channel is the busiest thoroughfare in the world. Craft of every description are traversing it day and night and often there doesn't seem to be enough room to squeeze another ship through. The astonishing thing is how it all can be done in such safety, for we all feel that we are as safe as we would be walking up Market Street. Now and then there are planes making a fuss, but they do not hit anything.

The *Charles Willson Peale* was in a 40-ship convoy on D-Day, and her Armed Guard officer, Ensign R. A. Dolen, noted that they were escorted "by the combined forces of the Allied navies." He also noted the reassuring presence of fleets of Allied aircraft: "Thunderbolts, Spitfires, Typhoons, Mustangs and others all too numerous to mention."

The invasion fleet of 4,266 ships and landing craft was supported by more than

700 warships, from battleships to cruisers, destroyers, minesweepers, and torpedoboats. This armada of warships included six British and American battleships; two monitors; two cruisers; 119 destroyers and destroyer escorts; 113 sloops, frigates, and corvettes; 80 patrol boats; and about 400 torpedo boats, small gunboats, and minesweepers.

Overwhelming Allied sea and air superiority kept ship losses much below the point that planners had anticipated, but merchant ships did not go unscathed. The channel was not quite as safe as Market Street. A number of Libertys, including the *Matthew Goldsboro* and the *William L. Marcy*, were hit by artillery fire but were not put out of action.

One of the heaviest D-Day losses occurred on the British Liberty ship *Sambut*, which was hit by long-range German artillery located at Calais. The effect of these heavy caliber hits was both mystifying and tragic.

Shortly before the first shell hit, officers on the bridge saw two geysers of water several hundred feet from the ship, but before they realized what was happening and could take evasive action a second shell (later determined to be at least 12-inch) burst on the port side just above the engine room. There was no report of casualties, the hit did not seem to have damaged the vessel substantially, and the *Sambut* continued on. Less than 30 seconds later, another shell hit on the port side forward of the bridge, again there being no evidence of serious damage from the shell itself. But in a minute or so fire broke out in a deckload of gasoline cans, and before fire hoses could be manned, the forward part of the vessel was an inferno.

Fifteen minutes after the first hit, the *Sambut* was abandoned. Crew and passengers left in two lifeboats and 30 rafts while several landing craft hurried up to take men over the side from scramble nets. Unfortunately, 130 troops were drowned in this unusual disaster, probably because they were not able to inflate their life preservers in an emergency, either through excitement or because of defective equipment.

On her first trip to Omaha Beach, the *Enoch Train* carried complete motor combat equipment for 485 men of the U. S. 90th Division. Off the beach, gunners on various Liberty ships and LSTs opened fire on suspicious aircraft in conditions of poor visibility and learned later that they had shot down four friendly planes. After several shuttle trips, the ship loaded at Southampton, in November 1944, then sat for a month with engines on standby waiting for orders before she was finally instructed to discharge at Antwerp. In Antwerp one of the ship's gunners, Clarence A. Cox, was in the Rex Theater when it was hit by a V-2 rocket. Cox

escaped with a sprained shoulder and a bad case of shock, although scores of people were killed or wounded.

□

Within six weeks after the initial Normandy landing, 30 Allied divisions had been put ashore with hundreds of thousands of tons of equipment. More than 150 ships were assigned to a shuttle service, ferrying supplies from English ports to the beachheads and, later, to the captured ports of Antwerp, Ghent, Rotterdam, and Le Havre.

The *David Starr Jordan* was a typical shuttle ship. She made deliveries to Omaha and Utah Beaches from Swansea, Cardiff, and Belfast and experienced numerous and varied adventures in the process. Three days after D-Day she collided with the *George E. Badger*, but no great damage was done. Soon after arriving at Omaha Beach that night a 20-millimeter shell landed on the foredeck and exploded, injuring several soldiers. The log for 25 July 1944 noted: "Vessel attacked by enemy planes. Ship bombed and strafed. Two soldiers killed and eleven injured. One Armed Guard suffered severe wounds. Ship's gunnery officer wounded."

Often as not, these shuttle runs were more routine than exciting. In October the ship spent two very uncomfortable weeks at anchor in rough seas off the French coast waiting for orders to discharge cargo.

Off Utah Beach on 27 August 1944, the *Jordon* took on coal from the collier *Baron Ruthven*. Like a number of other Libertys, she had coal-burning galley ranges and had to "coal ship" from time to time so the crew could eat.

Enemy shore bombardment and air attack was more spectacular, but less dangerous, than underwater mines, which accounted for most of the merchant ship casualties during the invasion.

The terrific destructive force of a mine was described by survivors of the *Charles W. Eliot*, mined the morning of 28 June 1944 about four miles off Juno Beach. The ship had just finished unloading its cargo.

> At 0550 an explosion occurred under the after part of number three hold, causing the vessel to rise up into the air and to shake violently. Two or three seconds later a second violent explosion occurred under the stern. Hull plates cracked open—the explosion blew hatch covers and beams out of number four and five hatches to a height of 300 feet and caused the vessel to break just aft of number five hatch. Fragments of steel and ballast were blown several hundred feet into the air. One hatch beam landed on the boat deck . . . quarters in the midships houses

> were wrecked ... wash bowls were knocked off the walls ... numbers three, four and five holds were flooded.

Despite the flying hatch beams and the general havoc wrought by the blast inside the ship, there were no fatalities, although a number of men were injured.

When a mine exploded on the after port side of the *Francis C. Harrington*, the blast sprung four sections of the propeller shaft and wrecked most of the auxiliary machinery, such as pumps and dynamos.

Inspired by Chief Engineer Leonard W. Valentine, the black gang worked for five days in the half-flooded engine room and shaft alley, sometimes up to their necks in water, to remove shattered bearings, straighten the shaft, and repair the machinery enough so that the vessel could discharge its cargo and return to England under its own power. For his "skill, ingenuity and stout determination" in salvaging the *Francis C. Harrington*, Chief Engineer Valentine was awarded the Merchant Marine Distinguished Service Medal.

Just after unloading 500 troops and their equipment, the *Charles Morgan* was hit by a bomb in number five hold and settled to the bottom in 33 feet of water. Chief Engineer Sidney Scott and Chief Steward Robert McChain searched the ship for injured men and left only after the Navy declared her a derelict. They later led a salvage party back on board to obtain valuable equipment.

Many casualties had been expected from aerial bombing, but this danger proved almost negligible, so great was Allied air superiority. In the first six days after D-Day, ships landed 326,000 men, 54,000 vehicles, and 104,000 tons of supplies. About 200 ships of all kinds arrived daily at the artificial harbors. Winston Churchill said of the cargo-hauling operations: "The Merchant Navy played an outstanding part. Their seamen cheerfully accepted all the risks of war and weather and their staunchness and fidelity played an impressive part in the vast enterprise."

The *Wolcott* spent four months on the Normandy shuttle, carrying everything from ammunition to crated oranges. A large percentage of the latter disappeared before the ship reached Normandy. She first anchored off Normandy the morning of 7 June. Soon after that her log noted: "Unknown transport sank some distance off our starboard side." The next day the log read: "Tremendous fire from ships around us directed at enemy aircraft. Fired at plane overhead. Naval ships shelling coast. Slight swells. Fair and clear." The fair and clear weather didn't last long. By 19 June, seas were so rough that no cargo could be unloaded, and for the next five days she had to go slow ahead on the engine to keep headed into the seas and reduce the wild rolling.

During 13 months of shuttle service between England and France, from February 1944 to April 1945, the *Samuel Colt* delivered a huge amount of war freight and made two rescues. On one cross-channel trip, the crew spotted a plane about to make an emergency landing. The *Colt* headed for the spot at top speed and picked up an RAF pilot, floating in his Mae West. His flying companions circled the area until they were sure he was safe, then dipped their wings in "thanks" as they left. While steaming up the Bristol Channel in a heavy fog, this same ship picked up an SOS from a sinking British collier and rescued 36 of the survivors.

During the *Dan Beard*'s first trip to Omaha Beach on 9 June, cargo discharge was delayed for 24 hours because the captain refused a demand for food by sailors manning two LCTs. The landing craft left the ship and did not show up again until ordered to continue the unloading.

The *Dan Beard* was either torpedoed or mined in October of 1944 while bound from Barry, Wales, to Belfast. In rough seas whipped up by 40-knot winds, there was "a terrific vibration amidships, followed immediately by the ship's back breaking just forward of the house." Within five minutes she broke in two. Heavy casualties resulted when one boat was swamped by the heavy seas and capsized. In all, 17 merchant seamen and 12 Navy gunners lost their lives.

Mines or acoustic torpedoes accounted for four Liberty ships in a 20-ship convoy en route from Southampton to Utah Beach on 29 June 1944. The *H. G. Blasdel* was hit, managed to return to England, was beached at Southampton, and declared to be a total loss. The ship had 509 men on board at the time, including 436 American troops. Most of them were taken off safely by LST326, but there still were many casualties.

The *James A. Farrell,* hit just a few minutes later, was towed to Spithead and was also written off as a total loss. Four soldiers were killed and 45 injured when heavy, steel hatch beams fell into the troop quarters. At the same time, the *John A. Treutlen* was either mined or torpedoed, with a number of injuries to merchant crewmen and Armed Guard men. While LST336 was taking the injured from the *Treutlen,* a violent explosion under the bow of the *Edward M. House* sent water mixed with gravel and shells from the ocean bottom shooting 200 feet into the air. Still able to continue on her way, this Liberty, under command of Captain Austin Fithian, discharged her troops and cargo at Utah Beach before returning to England for repairs.

The master of the British Liberty ship *Samlong* was high in his praise of his ship after an "extremely violent" explosion under the engine room, while at

anchor two miles off Juno Beach on 3 August, killed the men on watch below. "Not one piece of welding [beyond the impact area] on this ship cracked or broke," he reported. After the ship was towed to England and drydocked, it was ascertained that the damage was done by an acoustic torpedo. The SS *Fort Lac La Ronge* was damaged by another acoustic torpedo.

The *William L. Marcy* was at anchor six miles off Juno Beach on 7 August, empty and awaiting convoy, when it was hit by a torpedo, probably of the acoustic type. The *Marcy* was towed to England and beached. Her only fatality was a British Army sergeant.

On the following day, an explosion damaged the Normandy-bound *Ezra Meeker*. The Canadian corvette *Regina* came up, supervised the disembarkation of her crew into an LST, and directed the rigging of a towline between the LST and the damaged ship so it might be towed to port and its 5,800 tons of trucks and other cargo might be saved.

Just as the LST started to get the freighter under way, the *Regina* blew up in a tremendous explosion that killed many of her crew. A German U-boat had bagged both ships. Sixty-five survivors from the *Regina*, covered with fuel and suffering from injuries and shock, were rescued by American landing craft, some of whose sailors jumped overboard to save the exhausted Canadians.

The *Jonas Lie* was torpedoed and sunk on 9 January 1945, as was the *George Hawley* on 21 January while en route from Cherbourg to Cardiff. Two of the *Hawley*'s engine room watch were killed, the rest were rescued by the *Wiley Wakeman*. The *Hawley* was towed to port.

The *Robert L. Vann*, proceeding in a single-column convoy through a swept channel en route from Antwerp to the Thames, broke in two and sank after hitting a mine off Ostend on 1 March. Several men were injured but there were no fatalities.

Also returning from Antwerp on 22 March was the *Charles D. McIver*, which hit a mine and sank in shallow water. The explosion, typical of those caused by mines, threw men flat on the deck, blasted typewriters loose from their desks and threw them against bulkheads, ripped radiators from walls, and tore doors from their hinges.

Just a day prior to this, the *James Eagen Layne* was torpedoed en route from Barry, Wales, to Ghent, and although HMS *Flaunt* and *Atlas* towed her to Whitesand Bay and beached her, she was written off as a total loss. The same day the *John R. Park* was torpedoed nine miles off Lizard Head and sank several hours later but without any casualties.

The *Solomon Juneau*, torpedoed on 9 April on the way from Ghent to the Thames; was towed to Dover and beached. Two Armed Guard gunners were killed when a torpedo exploded under the stern. The British Liberty *Samida* was hit shortly before that.

The *Will Rogers*, in a seven-ship convoy bound from Liverpool toward Antwerp, was torpedoed on the afternoon of 12 April. In her holds was a strange cargo: 2,764 tons of airfield landing mats and several hundred tons of doughnut flour. The ship was beached at Holyhead and later towed to Liverpool for repairs.

Twenty-three-year-old Captain Jean Patrick, one of the youngest shipmasters in the merchant marine, had command of the *Francis Asbury* when she hit a mine off Ostend on 3 December 1944. Exploding under the engine room, the mine broke the vessel's back with a blast so violent that machinery blown out of the engine spaces severely wounded and scalded Chief Engineer Justice, who had been asleep in his room on the boat deck. The second and third assistant engineers, Francis Rack and Frederick Williams, risked their lives to get the Chief out of his shattered room and into a lifeboat, where he died soon afterward. They were later awarded the Merchant Marine Distinguished Service Medal for their efforts. Ten of the merchant crew and seven Armed Guard men were lost.

The last Liberty to be put out of service through enemy action in the European theater of operations was the *Horace Binney*, which struck a mine 8 May 1945, about 30 miles from Ostend. The explosion broke the vessel's back, after which it was towed to Deal and beached. There were no casualties.

Despite mines, bombs, and storms, the shuttle ships kept cargo flowing across the channel. In the first 109 days after D-Day, they put ashore 2,500,000 troops, 500,000 vehicles, and 17,000,000 tons of ammunition, food, and other supplies. The *George Dewey* made 12 shuttle runs to Omaha and Utah Beaches and Rouen. The *Peale* made seven shuttle trips. The *Robert L. Vann* was sunk by a mine but there were no casualties. The *Dan Beard* saw the nearby *Ezra Weston* "rise out of the water" after a mine explosion and sink in minutes. The *William Tyler Page* rescued six survivors of an LST blown apart by a mine.

It is a tribute to the designers, builders, and crews of the Libertys that most of them hit by mines stayed afloat and were able to return to port, although few ships that hit mines were salvaged and put back in service. A mine explosion caused so much structural damage to the keel and lower hull of a vessel, which required expensive and time-consuming repairs in busy shipyards, that most vessels so damaged were written off as "total constructive losses."

LIBERTYS IN THE ARMY AND NAVY

The simple, uncomplicated design of the Liberty ship made it highly adaptable to conversion for special requirements, and by the time the war ended a couple of hundred of them, in at least a dozen configurations, had joined the Army and Navy. Their military employment ranged from hospital ships to freshwater distilling plants, with the most of them, actually, doing exactly what they had been built for in the first place, carrying cargo.

Naval conversions of EC2 hulls resulted in the following numbers and classifications of ships: 10 AG (miscellaneous), 66 AK (cargo), 4 AKN (net cargo), 11 AKS (general stores issue), 6 AR (ship repair), 10 ARG (internal combustion engine repair), 2 ARV (aircraft repair), 1 AVS (aviation supply), 2 AW (distilling ship), and 21 IX (unclassified, usually tankers). After World War II, another 16 EC2 hulls were converted to YAGR (radar picket ships). The Army converted six EC2s to hospital ships for operation by the Army Transport Service, and another six to aircraft repair ships. Such ships were usually given new names honoring Army officers. Another 14 ships were converted to mule carriers, but not given new names, possibly because no one could think of anything appro-

priate, yet polite. And a total of 220 ships were altered, but not taken over or named by the Army, to carry from 300 to 500 troops or prisoners of war.

The need for the POW ships was an unexpected development of Allied victory in North Africa and the near-embarrassing flood of German and Italian captives. A fleet of Liberty ships—eventually, more than 200 of them—were hurriedly given makeshift conversion that enabled them to carry nearly 75,000 prisoners to the United States. The military prisoners had to rough it, with C-rations, rationed water, and rationed bunks. Some of the first conversions were done so hurriedly there was no time to install bunks, and they slept on bedrolls or bare decks. Prisoners were quartered belowdecks behind wire barricades. Each ship also carried about 40 armed guards, a doctor, and three enlisted medical assistants.

Not all the POWs were unhappy over the way the war ended for them. As a shipload of prisoners pulled away from the dock in a Mediterranean port, one of them shouted to the American soldiers left behind: "You guys are going to Berlin, but we're going to Brooklyn!"

The conversion for use as hospital ships involved the most extensive alterations in any Liberty ship hull. The cargo holds were turned into 44 hospital wards by installing additional decks and bulkheads through nearly three-fourths of the length of the ship. The ships were provided with necessary operating rooms, laboratories, and medical support facilities for 600 bed patients, and with berthing and messing arrangements for the medical personnel to care for that many patients.

Army hospital ships were the *Blanche F. Sigman, Dogwood, Jarret M. Huddleston, John J. Meany, St. Olaf*, and *Wisteria*. The *St. Olaf* was commissioned in the Army under her original Maritime Commission name. *Dogwood* was originally the *George Washington Carver*, and *Wisteria* was built as the *William Oslar*. The *John J. Meany*, built as *Zebulon E. Vance*, honored an officer killed in North Africa. In 1946 the ship was again altered, that time to carry war brides from Europe, and resumed her original name. The *Blanche F. Sigman*, originally *Stanford White*, honored an Army nurse, and the *Jarrett M. Huddleston*, originally *Samuel F. B. Morse*, honored an Army surgeon, both killed in Italy. The *St. Olaf*, decommissioned as an Army hospital ship in 1945, had a short career as a transport, carrying as many as 1,000 troops and 147 women and children.

Troop-ship duty was somewhat like spending a month in Grand Central Station, and one such trip was nearly enough for Second Mate Bob Seager of the *Ponce de Leon*. At Le Havre in December 1945 the ship was loaded right to the

overhead with men from the 20th Air Force, en route home from the China-India-Burma theater. Practically every one of them was seasick all the way across, and by the time they entered the Chesapeake Capes, the ship had an air about her that discouraged even the seagulls. But worse, heavy weather had set her leaking like a sieve, and the Coast Guard boarding officer refused to clear her to sail to Baltimore, saying she "was unseaworthy for Chesapeake Bay operations."

"That's funny," said Captain Freddie Larson. "She crossed the North Atlantic all right."

The Army-converted mule carriers were an unexpected usage of Liberty ships in a highly mechanized war, where ships loaded down to the marks with jeeps, tanks, trucks, and locomotives were a common sight. Nevertheless, a lot of mules were either imported into overseas theaters or deported from the United States, depending on how one felt about mules. Conversion to this unglamorous duty cost about $317,000 per ship.

Ships so converted were the *Alcée Fortier, Charles W. Wooster, Cyrus W. Field, F. J. Luckenbach, Henry Dearborn, John J. Crittenden, Zona Gale, José Navarro, Joshua Hendy, Peter Silvester, Samuel H. Walker, Santiago Iglesias, William J. Palmer,* and *William S. Halstead.* A shipload of mules varied from 320 to 699 animals because, contrary to all expectations, Texas mules were smaller than Missouri mules. Their stalls, adjustable to fit various sizes, were built athwartships as it was found that mules, unlike people, were more liable to be seasick when they rode fore-and-aft.

The Army aircraft repair ships, with their commissioned and original names, were: *Brig. Gen. Alfred J. Lyon* (*Nathaniel Scudder*), *Brig. Gen. Asa N. Duncan* (*Richard O'Brien*), *Brig. Gen. Clinton W. Russell* (*Robert W. Bingham*), *Maj. Gen. Herbert A. Dargue* (*Rebecca Lukens*), *Maj. Gen. Robert Olds* (*Daniel E. Garrett*), and *Maj. Gen. Walter R. Weaver* (*Thomas LeValley*).

☐

The work involved in converting a Liberty to naval use varied according to her naval classification. All such ships had to carry larger crews, for increased gun batteries, communications, radar, and round-the-clock cargo-handling or repair work. The AKs had their boom capacities increased to 50 tons, and each had berthing facilities for 15 officers and 222 men. Their cargo capacity was about 400,000 cubic feet, as compared to the original Liberty capacity of

499,000, but they had to carry more provisions, water, fuel, and ammunition. The AGs were fitted to carry 28 officers and 899 enlisted men. An AK could carry only 15 officers and 180 men, but had space and refrigerating equipment for 219,018 cubic feet of refrigerated cargo. The IX conversions—tankers—carried the smallest crews; with less than a hundred officers and men, but had tank capacity for 63,000 barrels of fuel oil. The tankers that became freshwater distilling plants could carry 33,600 barrels of water.

The YAGR conversions, after World War II, when time and money was in better supply, resulted in ships that no wartime sailor could have imagined. The *Picket* (*James F. Harrell*), a typical YAGR, carried 14 officers and 167 enlisted men. Part of her capacious cargo spaces had been changed into radar spotting, tracking, and communications centers where batteries of radarscopes were manned day and night to pick up and follow the movements of aircraft. The *Picket* and her sister ships remained on ocean stations for 30 days at a time. With hull space to spare, one hold was equipped as a gym and recreation hall, with volleyball and basketball courts, a boxing ring, weight-lifting and table tennis rooms, hobby shops, and an archery range. Another hold was made into a theater and lecture hall with a capacity for 250 people. Tanks holding 6,000 gallons of water ballast provided more stability and minimized rolling.

Liberty ships commissioned in the Navy were usually renamed, following the long-established system of specific categories of names for each type of ship. Several dozen cargo ships were named for stars and constellations, ranging from *Acubens* to *Zaniah*. As the brighter and better-known star names had been used years earlier for ships such as *Altair*, *Canopus*, *Spica*, and *Vega*, the new cargo ships carried names very few people had ever heard and even fewer could pronounce. Because most prominent stars were named centuries ago by middle-eastern astronomers, the U. S. Navy had a lot of ships with Arabian names, such as *Arkab*, *Kochab*, and *Azimech*.

Another group of 22 ships, designated IX, were named for a whole menagerie of animals, again ranging from one end of the alphabet to the other, *Antelope* to *Zebra*. A dozen or so repair ships were named for islands. About three dozen ships, possibly because they were marked for transfer to the Navy before completion, were given their Navy names in the star, animal, or island group at launching, instead of the usual famous person name in the Maritime Commission system. The 16 postwar radar picket ships were given names indicative of their mission—*Scanner*, *Tracer*, and *Watchman*, for example.

While most Navy Libertys spent much of their time in dreary base-support and supply runs, somewhat after the fashion of the *Reluctant* in *Mr. Roberts*, there were moments of excitement for some of them. A typical tanker, the *Camel* (*William H. Carruth*), was commissioned in November, 1943 and decommissioned in 1946, during which time she served as a floating fuel farm in the Marshalls and at Eniwetok, Saipan, and Okinawa. *Camel* and her seven officers and 95 men pumped over 73,000,000 gallons of fuel and aviation gas to ships of the fleet as their contribution to winning the war in the Pacific.

At Saipan, in August, 1944, two Japanese sneaked aboard, then went over the side when they were discovered. One was killed by a guard. The survivor said that all they wanted was to surrender and get out of the war.

Camel's big day came on 6 April 1945, in the opening phase of the invasion of Okinawa, when a massed attack by Japanese suicide planes sank two U. S. ships and damaged at least two dozen more. No one knows how many planes were shot down that day, but the *Camel* got two of them.

Another Liberty tanker, the *Caribou* (*Nathaniel B. Palmer*) spent only 22 months in the Navy but in that time she serviced 847 ships, from battlewagons to spitkids, with more than 70,000,000 gallons of fuel oil. There were the fighting ships that made headlines, but without the hard-working tankers the headlines would have been greatly reduced. The *Caribou*, not a fighting ship at all, once found herself in the exact middle of a very lively battle. At Leyte on 27 November she was pumping oil to a battleship on one side and a destroyer on the other when an air attack came in. Not one of the three ships could move, but half a dozen others steamed around them in a circle and put up an antiaircraft barrage that kept the attackers away, while shooting down 14 of the enemy planes.

A couple of the Navy's Libertys saw more action before they joined the Navy than afterward. The *Zebra* (*Matthew Lyon*), while wearing her original name, was torpedoed on 11 August 1943 en route from Guadalcanal to Espirito Santo. She was patched up, pressed into service as a net cargo ship, and then, after a complete repair job, commissioned in the Navy on 27 February 1944. The *Antelope* (*J. H. DeYoung*) while still a merchantman, was torpedoed by a Japanese submarine near Noumea, New Caledonia, in August of 1943. After being taken over by the Navy, she was used for storage until returned to the Maritime Commission at Subic Bay in March, 1948. She was then sold to the Asia Development Corporation of Shanghai for scrap, but may well have sailed for some years after that under the Chinese flag.

WAR LOSSES

Despite early structural problems there was an overall soundness in the welded hulls and the Liberty ships as a whole gave tremendous and gallant war service, and they often sustained – and survived – terrific punishment under the most extreme conditions. A single example is the loss of the *Cornelia P. Spencer* (qv) which stayed afloat until a third torpedo sank her.

Doubtless many deeds of heroism remain untold, but rated very highly from those known must be the valiant action of the *Stephen Hopkins (I)* which, with her single 4-inch gun, engaged and sank the powerfully-armed German commerce raider *Stier.*

Nevertheless, all gallant services deserved recognition and this point was taken by the USA with her awards of 'Gallant Ship' plaques; the first vessel so awarded for its heroics was the *Samuel Parker* – under which name will be found a summary of her qualifying deeds.

The first vessel in the long procession of Liberty war losses was the *John Adams* which, as early as May 1942 when only a couple of months old, was caught in the Pacific by a Japanese submarine and torpedoed in No 4 hold. The ship was carrying cased petrol and 24 lucky survivors reached the safety of Noumea.

Luck also played its part when some vessels were under attack. In June 1943 when 50 miles south of Rio the *Charles Willson Peale* fought off an attack by the U-199. On another occasion the *Albert Gallatin* was struck by a salvo of three torpedoes – all of which failed to explode! But her luck ran out in the following year when she succumbed to another submarine attack.

Some Liberties were converted into differing types of trooper, and this in some cases led to heavy loss of life. During the war a grand total of 4½ million US troops embarked for Europe and Africa, of which 3,594 were lost at sea. A great loss of 504 men occurred when the *Paul Hamilton* (qv) exploded, whilst a further large loss of 76 troops occurred with the sinking of the *H.G. Blasdal.*

Similarly, the USN also suffered its share of losses; 196 persons were killed with the disintegration of its Liberty ship USS *Serpens* in January 1945.

An interesting group of losses were the seven Liberties, all previously war-damaged, which were used as 'Gooseberry' breakwater blockships at the 'Mulberry A' (American) harbour of the Normandy landings in June 1944. 'Gooseberry' was the code name for a shelter provided by sinking a line of blockships in 2½ fathoms or less, whilst a 'Mulberry' was an artificial harbour erected for the landing of stores off enemy beaches.

It may be noted that this 'Mulberry' harbour was formed under extremely adverse conditions. Nevertheless, it was constructed in only ten days instead of the estimated thirty days. But the very speed of its construction and the incorrect positioning of the ships told against the operation at the time when its strength was most needed. For in the most violent north-easterly summer storms for forty years which raged later the same month, breaches were torn in the breakwaters, Liberty and other blockships broke their backs and a great mass of wreckage was strewn ashore. Destruction was complete and the harbour, including the blockships, was officially abandoned.

The Liberty breakwaters have their own story. Invasion plans had deemed 'Utah' and 'Omaha' beach-heads as the sites for Gooseberries 1 and 2 – vulnerable positions both to the enemy and to the weather. Ferocious battles raged ashore as the first three ships were scuttled at 'Utah', including the Liberty *James Iredell.*

In the meantime five more vessels had formed the 'Omaha' spearhead. The *George S. Wasson* was hit by shell fire and an enemy bomber disintegrated above her decks whilst she was positioning. Her submerging hull was caught by the tide, tugs failed to hold her and she sank after drifting out of position. The following ship, the *Matt W. Ransom* took up her position whilst under dive-bomber attack. Her stern wire parted at the crucial moment, she drifted more than a thousand feet and sank in shallow water.

A third Liberty from the force, the *Benjamin Contee,* abandoned by her tugs when under heavy shell fire was fortunate to settle in her correct position.

Ultimately two smaller harbours were formed around these misplaced ships; the remaining Liberties were successfully scuttled and the lines of breakwater ships daily grew longer. Later, within these breakwaters, moorings for Liberty supply ships were laid.

Whilst serving in this capacity the *Charles Morgan* met her end. She received a direct bomb hit aft; this detonated her 5in ammunition lockers and the after end of the ship blew up with a shattering roar.

In all, a total of more than two hundred Liberty ships were lost during the war, of which some fifty vessels were lost whilst on their maiden voyage. An example of this, from the early days of Liberty shipbuilding, are the seven Liberties (Bethlehem-Fairfield yard Nos 2008, 2010, 2012, 2015 and 2018, and North Carolina yard Nos 4 and 5) which participated in the 35-ship PQ.17 convoy from Iceland to North Russia in June 1942. Twenty-three (including four Liberties) were sunk – taking to the bottom some 3,500 vehicles, 430 tanks, over 200 bombers

and 100,000 tons of other war cargo. Only eleven vessels (including two Liberties) finally reached the 'haven' of Soviet shores. The remaining Liberty (the *Richard Bland*) had grounded off Iceland when the convoy sailed, and had returned to port.

Of course, during all the war years the hazard of normal marine risk was ever-present, and added its quota to the long list of wartime casualties. Nevertheless, many vessels were salved and repaired for further service -- as for instance the *William B. Ogden* which was stranded for more than a year before being refloated by the United States Coastguard Service.

Liberty Ships, Boxed Aircraft Transports, Z–EC2–S–C5 Type

During the war a large number of Liberty ships were turned over to the US army and navy for special services and a number were extensively converted.

In most cases the ships were converted after their delivery from the builder's yard to the Maritime Commission, but with these vessels already earmarked for forward delivery to the armed forces, certain 'deletion' instructions were given to the builders, this preventing the installation of unnecessary outfit and an undue amount of tear-out work at the conversion yard.

The boxed aircraft transport was a re-design of the basic type of Liberty ship, and it was also very similar to those re-designed as tank carriers (see Part Four, Section B). But with the aircraft transports four hatches (two forward and two aft) replaced the customary five of the standard ship and they were also increased in size over those of their counterpart. Three hatches had dimensions of 23 ft by 42½ ft and the fourth was 20 ft by 20 ft.

Instead of the customary three steel masts, the masting was arranged to handle loads of up to 30 tons, and this involved the fitting of four sets of goal-post type masts – one set forward of each hatch – and a pair of king posts fitted at the bridgefront. Two 30 ton and two 15 ton cargo booms were located at each large hatch, whilst No 4 hatch was equipped with two 5 ton derricks.

Forty vessels of this type were ordered and the first one was delivered in January 1945. Others followed during the following ten months, but by the latter part of this period the need for the vessels had faded. Only thirty-six were actually delivered and the remaining four contracts were cancelled. After the war the majority of these ships remained under military jurisdiction, and later many were further converted for varying purposes.

The modification of a group to naval auxiliaries commenced in the mid-1950's, when they became Ocean Radar Station Ships (YAGR). Prior to this the first four vessels of the programme had been designated YAG (miscellaneous).

These radar vessels were a new conception in the USN and were employed primarily to provide the United States seaward approaches with radar coverage as part of the air defence system of the American continent. They were, in fact, the first vessels to carry equipment specifically designed for this purpose.

The conversion of each ship included the installation of additional communication equipment, air and surface search radar, a combat information centre and much improvement in the accommodation, both to the berthing and in the recreational areas.

In this new guise the complement of each vessel totalled 151, made up of thirteen officers and 138 ratings.

Conversion of the first eight vessels began in 1955-56, and the four vessels YAGR 9-12 were dealt with under the 1957 naval appropriations programme. The final four came under the following year's programme.

In September 1958 all the YAGR vessels were reclassed AGR (Radar Picket ships) but retained their names and numbers.

During 1965 the vessels were stricken from active fleet status and placed in USN Reserve.

Other interesting conversions by the USN concerned three vessels of the New England shipyard's output of eight of this type. At New York in September 1960, conversion began of Yard No 3127 into a Hydrographic and Research vessel, and the ship commissioned in July of the following year.

Later, similar conversions of the remaining two (Nos 3125 and 3126) were carried out at Newport News and both entered service late in 1963.

All three ships were used for various experiments as well as for research; the latter work undertaken particularly involving radio communications and electro-magnetic radiation.

In April 1964 these three vessels were reclassed as Technical Research ships.

Liberty Ships, Army Tank Transports, Z–EC2–S–C2 Type

The Liberty ships adapted for use as transports for army tanks were also a re-design of the basic type of ship, and these – the so-called 'zipper ships' – were then designated as the Z–EC2–S–C2 type.

The addition of the letter 'Z' and its use as a prefix to a design type was intended to indicate modifications to the standard ships, so making them special purpose ships. Nevertheless, the records of the Maritime Commission show that the Z prefix/designation was not consistently used for this purpose, although it was applied both to these ships and to those which were re-designed as aircraft transports.

Military requirements and anticipated future operations included plans for the use of a small number of army tank transport vessels in certain theatres of war, and so only eight of this type were actually built. Even so, it was necessary for the Maritime Commission to re-arrange their shipbuilding schedules and to allow a break in the production flow of the basic type of ship at the particular shipyard, for the construction and outfitting of these special vessels.

In emergency or as occasion demanded orthodox cargo ships – perhaps with more difficulty – were able to supplement them, as had already been proven in earlier times. Subsequently vessels of the boxed aircraft transport type (Z–EC2–S–C5), (see Part Four, Section A) also became available as supplementary ships, although their completion during the first ten months of 1945 proved too late for very much serious wartime activity.

In point of fact, these tank carriers were so similar to the aircraft transports that each type could readily substitute for the other, and, generally, they were regarded as one type for operational planning.

The prime intention of the tank carrier design was to ensure speedy, easy handling and transportation of vehicles with a maximum weight of 30 tons each. Therefore the masting arrangement was similar to that of the aircraft transports, being a set of goal-post (or bridge type) masts situated at the forward end of each hatch and a pair of bridge-front king posts – these latter being cross-connected only by wire stays – instead of the three single centreline masts of the normal Liberty ships. The tops of the goal-posts at No 3 hatch were fitted with cowl ventilators but the tops of the remaining posts were sealed with flush plating. Matching the normal Liberty type ships, two top masts (generally) were carried, although on both the tank-carrying and aircraft-carrying vessels they were fitted on the centreline but above the cross beam of the masts serving Nos 2 and 3 hatches. Again, the customary foremast crows nest was still fitted to these special vessels, but it was resited to a central position on the cross beam of the foremast.

The cargo handling gear also generally conformed to that of the boxed aircraft transports, this consisting of extra-length booms necessary for the working of heavy loads at long hatches, plus the usual 30 and 15-ton derricks. Additional gear fitted to some of the ships consisted of the British-style 'Admiralty Net Device', this being long booms hinged to both port and starboard of the forward and after masts. These booms, lowered when attack was threatened, had a steel net hung between them parallel to the sides of the ship – so placing an underwater 'screen' between the vessel and its opponent's torpedoes. However, this equipment was not a great success, for it reduced a ship's speed and spoilt its steering qualities at a time when, perhaps, these two qualities were most needed.

A main difference in the deck arrangement concerned the hatches, for although these numbered four – as with the aircraft transports – three were of slightly smaller dimensions. Hatches Nos 1, 2 and 3 measured 40 ft by 20 ft, this being a reduction in length of some 2½ ft and in breadth of some 3 ft over their counterparts. The dimensions of No 4 hatch remained unaltered at 20 ft square.

Internally the only difference was the installation of a platform deck beneath the second deck.

Other modifications jointly concerning these two types of special purpose ships involved the superstructure, for here the main deckhouse was slightly lengthened and two 36 ft lifeboats on gravity davits replaced the after pair of standard boats and their screw davits.

These eight vessels were built by only one shipyard and were delivered within the four month period commencing in November 1943. After the war they came under the control of the Department of Commerce and are currently laid up in the Reserve Fleet.

The 'Sam' Ships

'Sam' ships were a group of Liberty ships loaned to Britain during the war on lease lend terms, and consisted entirely of vessels of the EC2-S-C1 type. The terms were those of the Defense Aid Supplemental Appropriation Act, approved by Congress on 27 March, 1941, which provided for the transfer of merchant ships and other forms of aid to Britain under a lease lend formula.

In all, these loaned Liberties totalled some 200 vessels, this figure representing nearly 7½ per cent of the entire Liberty programme.

They were given a British form of nomenclature, this being the prefix 'Sam' to each name. It is generally believed that they derived this prefix from the fact that the ships came under the 'red duster' by the courtesy of 'Uncle Sam'. This no doubt lent a great deal of weight to the decision to use names with a prefix which acknowledged Britain's gratitude to the United States, but the basis of such naming was in reality a much more mundane and realistic one to the officialdom of the British Ministry of War Transport. Here, the vessels were given the type description of 'Superstructure Aft of Midships' and the initials of this description were applied to form the prefix to the class name.

However, this is not an absolutely accurate description if an exact half-length is taken into account, for the bridge-fronts of the ships occupy a position just forward of a precise mid-length line. But nevertheless, with midships being regarded merely as the waist of the ships, there is certainly no superstructure forward of this position.

For a time after the war the surviving lease lend vessels continued to trade under the British flag, thus playing an important role in the economy of the country at a time when the merchant fleet still had insufficient tonnage to meet all its requirements. Then, early in 1947, and in a sudden burst of nationalism partially prompted by the knowledge that Britain was able to operate these ships to and fro' across the Atlantic (and elsewhere) at a considerably lower cost ratio than that enjoyed by the USA for their own similar ships, America presented an ultimatum ...... Britain must return all the ships to United States ownership, but might be permitted to buy some of them outright.

Following lengthy discussions, the British Government finally allowed British owners to bid for one hundred of the ships, at £135,000 for each one.

Some British experts claimed that this was too high a price to pay for mass-produced wartime tonnage, but in the light of the situation and the urgent need to acquire tonnage, some of the finer points of 'sale and purchase' had to be overlooked.

In fact, the sale price of each ship was finally agreed at some £2,000 more than the 'permitted' figure.

All the British-flag Liberties were then 'technically' returned to America, although in practice many were still retained by their operators whilst the legalities of outright purchase were performed. The others were returned to America and many of these were placed into the reserve fleet. Some of them, with no previous name, retained their 'Sam' title whilst others reverted to their former names. A third group, intended to revert, did not in fact do so, and in course of time met their fate whilst still carrying British-style nomenclature.

Liberties were constructed as 'stiff' ships. To counteract this feature in the 'Sams' – and in particular those which sailed from certain British ports – there grew the wartime (and subsequent) practice of using solid ballast in the 'tween decks, sometimes even at the expense of stability, and certainly leading to a series of mishaps.

After a number of dangerous experiences with unsecured ballast had occurred, the British Ministry of War Transport issued a notice regarding the dangers of using stone, shale, slag and sand, and inferring that other ballasts were at least more stable. The notice recommended that ballast be kept well-trimmed and spread almost flat, but it gave no mention of the necessity of using shifting boards to control its movement, or of the fact that all solid ballasts might move if not controlled.

The question of stability arose again in 1944 when the *Sameveron* – in ballast and in convoy – nearly capsized off Newfoundland. She had previously loaded 2,000 tons of Thames ballast – not among the proscribed types – and this was divided between her lower holds and her 'tween decks. (Thames ballast was a mixture of small-sized stones and wet sand. Its known 'angle of repose' of some 40 degrees generally suggested that it might solidify and might even require to be broken up with pickaxes prior to removal.) With no shifting boards fitted, the ship sailed on a North Atlantic voyage and during a storm and in a beam sea her 'tween deck ballast suddenly shifted, rolling the ship on to her beam ends and to an angle of 55 degrees. Fortunately she rolled no further and when the gale abated her crew were able to venture below and shift the ballast back 'up-hill', after placing her shifting boards firmly, but belatedly, in position.

On another wartime occasion, and not for the first time in her life, the *Samsoaring* developed a severe list, this time when outward bound for Philadelphia. Her ballast, too, had shifted, but the ship luckily survived the ordeal.

Tragedy struck in post-war years with the loss of the *Samkey*. This Liberty ship loaded 1,500 tons of Thames ballast and stowed it all in the 'tween decks. She sailed from London for Panama in January 1948; was sighted in good order on the 29th and reported by radio two days later. Then she disappeared without trace. The vessel had passed through severe storms, and, later, a Court of Enquiry presumed that her uncontrolled ballast had suddenly shifted, high seas had overwhelmed her and the ship had gone straight down.

Notwithstanding, another near-disaster occurred only a few months later, when the shifting boards of the British-flag Liberty ship *Leicester* (ex *Samesk*, qv) actually carried away during an Atlantic hurricane and the vessel listed to 70 degrees. Luckily she survived the ordeal, and was towed in to the safety of Bermuda seventeen days later.

One exception to the ships which sailed with 'Sam' names under the British flag was the Liberty laid down as the *Adolph S. Ochs*. Completed as a 'Sam', she reverted to her original name within a very short time. Adolph S. Ochs was a famous editor of the New York Times, and a plea from influential Americans that the name be retained in his honour was accepted.

Later, on the occasions when the ship visited New York the newspaper concerned feted the crew at banquets, theatres and on tours – although in the interim periods the ship gave normal wartime service to various theatres of war.

After the war the ship reverted to American jurisdiction and was laid up in the Wilmington reserve fleet. Assigned to the shipbreakers in 1968, the vessel was one of the batch of twenty-two sold in a block sale involving all the remaining Liberties at this anchorage. The site was closed down after their transfer to the purchasers.

For the benefit of readers a complete list of 'Sam'-named vessels is included in the index.

Liberty Ships Converted to Hospital Ships

During the war twenty-four hospital ships served with the American army and seventeen with the USN, and all were operated under the provisions of the Hague Convention, Article X, of 1907, and in accordance with international practice.

Later a sub-convention was called by the USA for the purpose of adapting to maritime warfare the principles established at a previous (Geneva) convention for the conduct of Red Cross and other medical personnel during war. Although Article V of the Hague Convention prescribed specific identifying marks for hospital ships, the character of World War II and the progress of aviation made such markings alone inadequate and it was necessary to give supplementary means of identification. The major one was the addition of illuminated Red Cross signs on deck.

The army hospital ships were operated under the jurisdiction of their War Department and of the total of twenty-four vessels six were Liberty type ships which had been in commercial cargo service, and which were selected in November 1943 for conversion into hospital ships. The names allocated to these vessels were in accordance with the then existing policy of the Surgeon General's Office to have hospital ships named after flowers, although in the event all these names were not taken up.

The crews of these six ships were civilian employees of the Transportation Corps; all hospital staffs were assigned from the Medical Department and these complements functioned in the same way as shore-based hospitals. The arrangement of wards, rooms and other detail of hospital design were agreed between the Chief of Transportation and the Surgeon General.

Hospital ships were listed without cargo capacity, although international agreement permitted them to carry medical supplies, even for ultimate use in battle.

Patients on hospital ships were carried not more than two decks below the one on which the lifeboats were situated.

The following details particularly apply to the conversion of the *William Osler* into the army hospital ship *Wisteria*, but they are nevertheless typical of the work involved on other similar conversions from this type of vessel.

The *William Osler* had been in commercial service for some months when taken over by the army. All her cargo-handling gear (derricks, winches etc.) were removed and the vessel ballasted down for the removal of superstructure, bulkheads, piping and insulation, until little but the bare shell remained. Some of the double-bottom fuel tanks were converted to fresh-water tanks and additional ones added to Nos 4 and 5 holds.

Thereafter a 'lower deck' was erected within the hull and the vessel strengthened by the addition of a steel band, 18 in wide and 1 in thick, rivetted around 80 per cent of the hull. Similar plating was rivetted over the upper deck. Steel girders were installed at points of stress and further strength was gained by the erection of steel bulkheads and partitions: work then commenced on the new decks required for a ship of this type.

Hatch openings on the second and main decks – the only original ones – were closed, and then a third deck, superstructure deck, bridge deck and a special top deck were added.

All this work completely transformed both the internal and external appearance of the ship, for she now had more than three hundred separate areas of rooms, corridors, wards, clinics and laboratories. Five miles of insulation, from both heat and cold, was fitted, as was distilling equipment to supply a daily 160 tons of fresh water. Other equipment included sterilizing units, over 400 radiators, twenty-eight separate ventilating units and eight refrigerated spaces totalling over 15,000 cu ft.

The plans called for the ship to handle nearly 600 patients, and for this a total of forty-four wards were built, these handling from two to 108 beds. Thirty-five rooms were built for the medical staff and forty-one for the crew of the ship. Others were morgue, autopsy, biological and X-ray rooms and operating theatres.

Special attention was given to wards designated for mental patients and cells were provided for violent cases.

After completion of the superstructure the ship was given new 75 ft high masts and a new funnel wide enough to display 12 ft Red Cross symbols was fitted. Similar signs were displayed on the upper deck and on the hull.

The medical staff consisted of seventeen officers, thirty-nine nurses and 159 attendants. In addition the ship carried chaplains, signal corps men and a crew of 123.

Liberty Ships Converted to Troopships

During the war the USA operated over 300 vessels which, for an appreciable time, transported personnel on military and naval schedules. These vessels, which were intended to be regularly despatched on more than one voyage from embarkation ports in the USA to overseas destinations, were classified (in the true sense of the word) as troopships.

In addition, other miscellaneous vessels, including very many Liberty ships, came under this classification. Some of the latter were fully converted for the purpose; many others of the same type were converted to become troopships of only limited troop capacity.

Omitted from this troopship-group are other types of transport, generally those for Marines, Sea Bee's etc (designated AP's) and Navy Attack Transports (APA's), and the Liberty ships which were rapidly outfitted in the Pacific for bringing troops home quickly. These latter ones remained essentially cargo ships and their troop accommodations were removed upon arrival in the USA and after only the one homeward voyage.

Except for the Liberties which were fully converted to troopers (of which three did in fact serve for a while as AP's), the first use of this type of vessel for passenger-carrying followed Allied successes in North Africa, when it was arranged to convey large numbers of prisoners-of-war to America.

Accordingly many ships were nominated for this service and it was planned to accommodate, with only slight alteration, 308 POWs in each. A later decision increased the capacity to 504, but by this time 113 ships had already been fitted to the original requirements. Of these fifty-seven were left unaltered and the balance of fifty-six adjusted to take the higher figure. The remaining vessels from those selected and which had not commenced alteration, went directly into conversion for 504 persons.

The re-arrangement of cargo ships for troop use involved the installation of berths into selected compartments and the provision of evaporation plant, galleys and quarters for military, medical and signal personnel. Other major requirements were heavy-lift equipment, strong rooms and equipment storage spaces.

Defence features included de-gaussing gear, camouflage painting and an armament with gun crews at first supplied by the army but later manned by navy gunners.

Lifesaving equipment took the form of extra lifeboats, instant-release liferafts and lifefloats and a lifejacket for each person.

All troop accommodation was provided with heating and ventilation and two escape stairways. Generally, troops were not berthed lower than the waterline.

However, even with these ships so altered, they were still regarded essentially as freighters.

In due time it became obvious that once the conveyance of POWs had ceased this large fleet would be available for the transport of American troops. Therefore an improvement in carrying conditions involved more alterations and included reducing the berths from 5 high to 3 high tiers, and this reduced capacity to 350 troops.

Ships with this lower capacity were already in service when victory in Europe was achieved, and it was decided to re-deploy the vessels in the south-west Pacific. For this yet a further adjustment planned an increase in troop capacity to 550, and some 206 vessels from the original list were intended for such conversion. This work was completed on 200 of them; the remaining six were either lost or had not reached an American repair yard by V-J Day.

Despite these official capacity figures however, it may be noted that the *Benjamin Contee*, when damaged by an enemy torpedo in the Mediterranean, was carrying some 1,800 Italian POWs — albeit on only a short voyage, from which 320 were lost.

In the same theatre of war the *Paul Hamilton*, when lost, had 504 American servicemen killed, the majority of these being a special demolition squad on its way to the Anzio beach-head.

After the war many of these troopers were laid up when no longer required, for their troop accommodation made them unsuitable for cargo-carrying purposes.

Post War Years

POST-WAR DISPOSAL

When the war ended the USA owned more than forty million tons of new ships and the disposal of this vast fleet posed two major questions. How many could be used commercially and what was to be done with the remainder?

America had again become a maritime nation and had every intention of remaining one! This, combined with the world need for moving enormous tonnages, suggested 'sale' or 'reserve' as the obvious disposal of their surplus ships.

The qualities of the ships made them a problem. Either they were a national asset or were to become a menace to post-war commercial shipping, depending on the point of view. For their economical fuel consumption, excellent equipment of cargo gear and deck machinery and a 27½ ft draft were sufficient qualities to make them highly desirable to operators both in the USA and abroad.

Also the ships required only very minor structural alteration, generally only the removal of armament, surplus liferaft equipment and gun tubs, to transform them into excellent tramp ships for service all the world over.

And so, in the immediate post-war years, America allocated numbers of the vessels for possible purchase by some of her Allies and also by her former foe, Italy.

At the same time she indicated her desire for the return of the lease lend vessels under the British flag.

And whilst Italy and Greece's allocation of 100 vessels each, France's seventy-five, Norway's quota of twenty-four and China's share of eighteen were all under prompt negotiation, Britain's long-delayed request to purchase tonnage was casually added to the very foot of the allocation list.

Later the American mood of nationalism eased under the pressure of a reminder of the wartime agreement whereby America had concentrated on the building of merchant ships whilst Britain directed her major efforts to warship construction, and she finally authorised the sale of 106 vessels to the United Kingdom.

Therefore, in the following years and before the authority for their 'trading' sale expired in 1951, many Liberties passed into world-wide commercial ownership.

Others were operated for a while for the United States Government by private American companies, but the balance of the surplus ships formed the basis of the National Defense Reserve Fleet, created by an Act of Congress in 1946.

Over the years many vessels from this fleet have been sold for scrap (see Part Seven), whilst those in private ownership produced many variations to owners account, including conversions to heavy-lift, self-unloaders, bulk carriers and even to container ships.

A few of the Italian-flag vessels were converted during 1949-50 into motorships by the use of Fiat direct-drive engines, and this raised their power output to 3,600 bhp.

It may be noted here that one or two vessels, sold to private buyers soon after the war, did in fact retain their original names throughout their careers. One, the *Richard D. Lyons*, passed to commercial ownership in 1946 and, still under this name, finally succumbed at the age of 23 years to the shipbreakers during 1968.

When the price at which America sold ships after the war was determined, the cost figures were broken down into direct and indirect charges and different items were included or excluded – the latter exemplified by the 'recovery' of the costs of the two yards (Wilmington and Vancouver) which were retained as standby yards for use in future emergency. And so, although Liberty costs were not accurately segregated for this purpose from the other ships built, the estimates of the 5,601 ships delivered between 1939 and 1945 (including Liberties) gave the total cost as 14.2 billion dollars.

The original price put on Liberties during their sale to Allied nations received severe criticism in some quarters.

Britain acquired her allocation of ships at nearly £140,000 each – but they were destined to establish historic fame during the following years as their price range and values fluctuated in alternate peaks and depressions at the dictates of shipping needs and world crises.

By early 1949 the ships were changing hands for sums approaching the £200,000 mark. Three years later the figure was treble this sum for a top-class vessel built by an experienced shipbuilder.

At the time of the Suez crisis in 1956 values again increased and reached an all-time high when one British-owned vessel was sold for nearly £700,000. But then they as quickly slumped again. By 1960 values were down to less than £60,000 or its equivalent. By late in 1961 they had risen to above the £130,000 mark and by 1963 were down yet again to the 1960 level.

All this time the vessels were ageing and ships in generally poor condition or those from the reserve fleets were levelling down to rock-bottom values. A then 'low' was reached in 1962 with the disposal of an active ship for only just over £30,000.

Of the many Liberties retained by the USN many of those of the Z-EC2-S-C5 (transports for boxed aircraft) type have in more recent times taken on such roles as radar picket ships, technical research ships and the like. Other interesting navy conversions occurred in the 1950s when a group became classified as Miscellaneous Auxiliary Service Craft (YAG). From these a group of five vessels, YAG 36–40, classified as the YAG 36 class, were used to evaluate differing radical minesweeping concepts at minimum cost. Some of them were also used during atomic tests in the Pacific.

Without doubt the greatest post-war group variation concerned Liberty tankers – for most of these were converted into dry cargo freighters. Many of them were also lengthened to a standard 511½ feet and to some 8,500 gross tons by the insertion of a new 70 ft midbody. In some cases, too, a third mast was added forward (*Sealady*, ex *Alan Seeger*, qv) whilst with others a mast-house and vents sufficed.

Both with these vessels before their conversion and the remaining few which retained tanker status for a longer period, their need for disguise had long-since passed and a customary change became the removal of the derricks and often of the fore or main-mast too, so leaving a single stump forward in a variety of positions. In at least one case all three orthodox masts were removed completely from the vessel and replaced merely by two slender pole masts.

It may be noted here that on 25 May 1950, the United States Department of Commerce (Federal Maritime Board) assumed the functions of the United States Maritime Commission. The controlling body then became known as the Maritime Administration. This body is often referred to in America as MARAD.

THE LIBERTY SHIP CONVERSION PROGRAMME

In the early 1950s the American Department of Defense became increasingly concerned over the reducing ability of the National Defense Reserve Fleet to fulfill its role as a potential and readily-available emergency fleet.

Rapid post-war improvements in warfare techniques and in commercial shipping indicated that vessels not capable of a sustained sea speed of 15 knots were inadequate for logistic support and were a negligible asset to national defence.

This point had been proven by the Korean emergency, for military requirements during 1950 brought about the re-activation of all suitable fast ships from the reserve, but only a limited number of Liberties. Additional requirements necessitated the chartering of nearly all the other fast ships then flying the US flag and this left world-wide shipping and trade to be implemented by the remaining, unsuitable, 11-knot Liberty ships.

In 1953 it was decided to commence a 'Liberty Ship Conversion and Engine Improvement Programme' with the objectives of upgrading to modern requirements and defence needs the speed of the Liberty ship portion (over 80 per cent) of the reserve fleet; to assist the American Merchant Marine with the development of new types of propulsion machinery; to improve the standard of cargo handling techniques; and to investigate the sea-keeping qualities of high-speed Liberties with and without a lengthened hull form.

Tank-testing had previously shown it possible to increase the speed of the ships to a sustained 15 knots by the use of an engine of 6,000 shp, and this fortunately permitted potential use of 'Victory' ship turbines, large numbers of which were readily available from stock.

In August 1954 funds for the programme were allocated under Public Law 663, and four trial conversions (Bethlehem-Fairfield yard Nos 2017, 2035, 2045 and 2050) of the basic EC2-S-C1 type were decided upon.

Upon the experience gained with these four vessels depended future conversions and re-activations from the reserve fleet, so each ship underwent a differing type of conversion.

The common factor was the replacement of their main propulsion machinery. One vessel was fitted with steam turbines, another with geared diesels, the third with gas turbines and the last with gas generators.

In general, the development of gas turbine types of main engines was based on the conviction that technological advances made possible the use of this type of machinery, which was expected to give greater efficiency and lower operating and maintenance costs than conventional steam turbine power plants.

Also, in the gas turbine field, there was in existence a considerable industrial capacity for such production, for similar machinery rated at 5,000 hp or more had already been produced in large quantities and used in commercial service throughout the world. Therefore, such designs needed only slight modification to make them more suitable for marine use.

One of the four conversions retained its normal hull whilst the other three vessels were lengthened by some 25 feet and given finer lines at the bow.

Interesting results were shown by all the ships in their new guise, but a final cost in excess of 12 million dollars spent on four ships with only a doubtful future was deemed sufficient reason not to proceed with general re-activation, and no further conversions were undertaken.

In fact the ships soon joined their comrades in the reserve fleet, and an interesting point to note is that at the peak of the Vietnam war in late 1967/early 1968 – when fast ships were again in great demand – only one of the four was actually returned to service.

Further conversion details will be found under the names of the individual vessels. Lengthened hulls really put these ships into the C3 scale, but in practice they retained the EC2 designation. No contracts were awarded for a conversion design EC2-GE-8f, nor were any for three other designs (all prefixed EC2-ME, but suffixed 8c, 8d and 8e) which were for diesel-electric conversions, or for the diesel conversion type EC2-M-8a.

THE BREAK-UP OF THE FLEET

Of more than forty million deadweight tons of wartime American construction, nearly three-quarters of the total was accounted for by the Liberty ships. Many of the latter went into 'reserve' lay-up, and over the years their numbers gradually declined until by mid-1967 only some 650 remained in this status. By the same date an overall total of nearly a thousand Liberties (including reserve and commercially-owned trading vessels) had been scrapped, whilst more than 600 still operated under the flags of many nations.

Two years later the total number of scrapped Liberties had risen considerably, for during this period the number in reserve had dropped to 428 and the number still in private ownership had reduced by some 50 per cent. In addition eighty-three other Liberties remained laid up in military reserve.

Post-war casualty losses whilst the ships were still only a few years of age were quite minimal, with the exception of a number of belated 'war damage' losses – usually caused by stray drifting mines. Commercial tonnage at this time, with the exception of the large stock held by the government in its reserve fleet, was still at a premium and, naturally, all but the most serious damage caused by marine hazard was worthy of repair. Losses remained low until 1961 – also the peak year for scrappings – but from this year, when the early-built vessels were approaching an age of twenty years, a disquieting frequency of major casualties increased to a rate which, by 1965, was double that of the previous year. Over this same period Liberty losses rose from 4 per cent to more than 9 per cent of the world's total losses.

By the mid-1960s then, all Liberties had reached a 20 year old retirement age, had already undergone or were due to undergo the stringent 'Special 20 year Survey' and were therefore on the brink of outliving their usefulness.

Thus a sudden demise commenced, due to a number of factors, of which the major ones were accelerated corrosion and severe structural deterioration. This is cited by a single case, included herein for interest, of the *Agios Giorgis* (ex *Frank H. Dodd*, qv) and the reports of her final casualty before she proceeded to the shipbreakers.

For, as ships aged and values dropped, it became no longer economically possible to meet the rising costs of maintenance or renewal, classification, or even the insurance surcharge for 'over age' vessels: in fact Liberties generally became not worthy of the expense of repair.

By 1967-68, when all prices were being based on mere scrap value, Liberties were still fetching around the equivalent of £50,000 when delivered to Far Eastern shipbreakers, but the useless vessels sold 'locally' from the US reserve fleets for scrapping in the USA were only raising sums below the equivalent of £20,000.

Towards the end of 1968 shipbreakers in the Taiwan port of Kaohsiung had, for some time, been figuring prominently in scrapping reports from the Far East. The deals were always the subject of negotiation between the vendor and the shipbreaker, the latter's price offers being based on the lightweight tonnage of the vessels involved.

But about this same time these shipbreakers began to give a very thorough check to some of the ships arriving for demolition before acceptance by them was confirmed. In some cases the letters of credit were withheld pending even further negotiation. This development probably resulted from the shipbreakers previous experience, for their sudden checking concerned such items as machinery and fittings, bronze propellers and other valuable metals, and occasionally the light displacement was disputed. Generally these last-minute disputes led to price reductions, for sometimes the ships were short of their allotted outfit and on other occasions advantages might have been gained from the knowledge that a prudent owner, with his ship newly arrived in the breaking port, did not wish to suffer monetary loss from delayed delivery of the ship or undue retention of the crew.

An example of the value of such outfit is shown by the sale, at the end of 1968, of the *Amalia* (ex *J. Frank Cooper*, qv) – albeit to Japanese shipbreakers – for the above-average price of 138,000 dollars. The sale included a spare bronze propeller, and this item alone was valued at about 5,000 dollars.

However, all the very many factors involved and concerning these now slow, obsolete and worn-out vessels with a comparatively high fuel consumption still steadily compels private owners and governments to scrap their surviving Liberty ships in favour of modern, fast, more economic tonnage.

During the years of 1966 and 1967 the world's shipbuilders suddenly produced more than twenty differing designs of vessels styled as 'Liberty replacement' ships. Only a few of these designs, and particularly the British and the Japanese ones, gained immediate popularity among shipowners, and it is of interest to note that whilst the first Japanese-built vessel of the type took over nine months from keel-laying to delivery in 1967, the first British-built one (of the SD 14 type) was completed in only fourteen weeks.

PEACETIME OPERATIONS

When the end of World War II made great numbers of Liberty ships available for charter or purchase at nominal prices and revived world trade produced an abundance of cargo at high rates, the American merchant marine acquired a large and temporarily prosperous portion of tramp shipping; a trade that had for years been monopolized by the British, Greeks, Norwegians, and other Europeans, and had not been seen under the American flag for many decades.

However, shipping operators of other nations were not slow in building up their war-depleted fleets. Anyone with shipping know-how was almost certain to parlay one Liberty ship into a fleet or a fortune in the immediate postwar years, when there was American foreign aid or private cargoes for almost anything that could float.

Foreign merchant fleets still being short of ships and with profitable cargoes available for any kind of a vessel, American-flag tramps, mostly Libertys, carried millions of tons of relief cargoes to Europe and Asia and, later, great quantities of rehabilitation cargoes sent overseas by the Economic Cooperation Administration.

Accordingly, after World War II, Liberty ships sailed the seas under many names and many flags. They were to be seen in ports all over the world, and no new paint scheme or name could hide the fact that, whether they sailed under the Greek, Italian, French, or Panamanian flag, they were still the same ugly ducklings and expendables—U. S.-built Libertys.

The price of Liberty ships was set at approximately 35 percent of construction cost to help Allies who had experienced heavy ship losses. For the faster C-types, reserved mostly for American purchasers, prices ranged up to 87 percent of construction costs. By the time the Ship Sales Act expired in January, 1951, American operators had purchased 831 war-built ships, including 130 Libertys, at a total price of some $80 million. Foreign buyers, up to that time, had purchased 1,113 vessels. Most of them were EC2s, but the total included 98 Victory ships, 46 C1 types, a few C2 types, and some coastal freighters, tankers, and miscellaneous types. Foreign and American buyers had spent $425 million for Liberty ships by the time the Act expired. American firms showed little interest in Libertys until other types had all been sold. Profits to be made during the Korean War sparked their interest, however, and they snapped up 91 Libertys from reserve fleets before the 15 January 1951 deadline for ship purchases.

The value of Libertys held up amazingly well for two decades. Fluctuations in world tonnage requirements set the price, and during periods of intense tonnage demands, such as the 1956 Suez Canal crisis and the Korean War, a Liberty sold for as much as $2 million.

In typical sales during 1955, the *Hoosier State* (*Hugh J. Kilpatrick*)* was sold by American owners for American-flag operation and brought $500,000. The *Resolute* (*George H. Thomas*) went from the Panamanian to the Danish flag for $740,000. The *Marit* (*W. B. Ayers*), operating under the Norwegian flag, fetched $820,000 when sold to Greek owners for operation under the Panamanian flag. The American *Hawaiian Forester* (*George E. Waldo*) brought $450,000; she later was named *C. R. Musser* and *Reliance Serenity*. The *Polarusoil* (*Lafcadio Hearn*) was sold from American- to Panamanian-flag operation for $550,000. One of the lowest prices—$480,000—was brought by the *Sulphur*

* During their peacetime careers, Liberty ships were usually given new names when their ownership changed. Some ships had as many as nine names before they were scrapped. In this chapter, ships are usually referred to by their last, or latest name; all prior names appear in parentheses with the original name first and others in chronological order following. Where the name used in the text is not the last name, its place in the sequence is indicated by an ellipsis.

Mines (*Casper S. Yost*), which was still only $20,000 less than she had cost in 1946.

Again, in 1961, anticipating heavy grain shipments to Europe, sellers of Liberty ships demanded high prices. Several sold for more than $350,000, and one vessel went for over $400,000. Large wheat shipments boosted prices in 1963, forcing buyers to pay up to $300,000 for these aging tramps. By contrast, a slump in bulk cargo movements in mid-1958 dropped prices as low as $275,000. Such sharp fluctuations reflected the precarious nature of tramp shipping for amateurs and were one reason why so many American firms came and went in the business in the postwar years. Lower prices involved in American transactions reflected the shrinking demand for American-flag tramp ships, tramping being the only employment for Libertys not converted to special uses.

By June of 1947 there were more than 1,200 American tramp ships on the seas, as many as in the entire deep-sea merchant marine in 1939. Many of them were being operated by neophytes in the shipping business who had entered the industry to get the "fast buck" that was available as long as ships were scarce, cargoes were plentiful, and rates were high. Most operators had a minimum investment to make, as tramps could be chartered at roughly $8,000 a month rather than purchased from the U. S. Maritime Commission.

The number of American-flag tramps, and this included 500 engaged only in the coal and grain trade between the U. S., Europe, and the Middle East, had dropped to 950 by February of 1948. The decline was caused by higher government charter rates, foreign competition, and higher operating expenses. Always complicated by the intricacies of international currency, national preferences, international trade agreements, politics, and fast-changing cargo trends, not to mention the intense competition of shipowners wise in the ways of tramp operation, this highly specialized branch of the maritime business suffered a steady decline after 1948 as far as the American flag was concerned. Except for government-sponsored foreign aid cargoes and war shipments, there would have been little employment for even a small fleet of American tramps.

□

In their new lease on life, the wartime Liberty ships plied the peacetime cargo routes under many names. The *Willard R. Johnson*, from launching in 1945 to scrapping in 1967, had been, in turn, the *Neptunus, Apollo, Evimar, Theokeetor, Riverhead*, and *Maru*. The *Sanford B. Dole*, a 1943 Liberty tanker later became the *Giraffe, Sanford B. Dole* again, *Eileen, Peapendar, Ragnar Haess, Ocean Daphne*, and *Orient Lake*. She was converted to a dry-cargo ship in 1949 and was eventually scrapped in Japan.

Another ship with many names was the *George L. Baker*. After the war she was sold to the Dutch and became the *Kamerlingh Onnes*. In later changes of ownership, she was *Tonini, Texel, Southern Cross*, and finally the *Mindanao Merchant*.

The *James Cook* was sold to Greek owners and renamed *Antipolis* in 1957, *Andros City* in 1960, *Thermaikos* in 1963, *Calliope* in 1965, and *Vancalt* in 1966. In 1967 she was scrapped as *Michiko*.

Changes of name usually followed transfer of the ship to a new owner or a change in corporate structure for the same owner. Frequently, owners incorporated each of their vessels as a separate legal entity for financial or political reasons. Changing a ship's name is not done capriciously, for it costs from $700 to $2,000 for the necessary official documentation, advertising the intent for change of name, legal fees, and rewriting the mortgage agreements.

In some cases it must have been difficult for a ship to remember her latest name or who she worked for. The *Cyrus Holliday* became, in turn, the *Chrysanthy, Rhapsody*, and *Fos*..The *Charles Porter Low* continued her peacetime career as the *Northern Traveller, Teng*, and *Tieh Chiao*. The *Samjack* was sold to Alfred Holt and Company in 1947 for the Blue Funnel Line and renamed *Tudeus*. Next she went to the Glen Line as the *Glensburg*. In 1960 she hoisted the Liberian Flag as *Jucar*, the name under which she was scrapped in Japan in 1967. The *Efdemon* had been, in turn, the *Thomas Hendricks, Robert Fruin*, and *Amsteldiep* before she was sold to Taiwan wreckers in 1967 for $145,000.

Many Libertys survived wartime operations and escaped the wreckers, only to find a watery grave after long and profitable service. The *San Nicola* (*William H. Kendrick, Judge Bland, Athenian, Andros Citadel*) sank in 1967 with a full load of scrap metal while bound from the West Coast of the United States to Formosa.

In 1964, the *Grammatiki* (*George A. Marr*) was bound from Portland, Oregon, for Keelung, Formosa, with a cargo of scrap metal when she began leaking halfway between the West Coast and Honolulu. Pumps were unable to handle

flooding, and the ship sent out an SOS answered by the American steamer *Cotton State* and the British freighter *Roland*. They took off the crew of 29 just before the ship sank.

Numerous Liberty ships appeared on Lloyd's casualty list during the latter years of their service as they succumbed to accidents of one kind or another all over the seven seas:

> The Liberian Liberty ship *Universal Trader*, originally *the Edward K. Collier*, aground in latitude 06 degrees, 24 minutes, north; longitude 81 degrees, 47 minutes east, has broken in two.
>
> The Panamanian Liberty ship *Enosis* (*Otto Mears, Napoli, Posillipo, Federica Costa, Bianca, Bice Costa*) went aground in latitude 07 degrees, 52 minutes north, longitude 98 degrees, 56 minutes east after reporting fire in her number five and possibly number four holds. She had a cargo of coal.
>
> Greek Liberty ship *Odysion* sank approximately 300 miles from Walvis Bay. Crew rescued.

The *Odysion* was originally the *Ezra Cornell*, which had been the French SS *Isigny* from 1947 to 1965 before being sold to Greek owners, the Northern Marine Corporation of Monrovia. The dramatic end of her career, as witnessed by the crew of the Belgian tanker *Fina America* on 23 December 1967 while the ship was bound from the Persian Gulf to Antwerp, was reported in *Marine News*, journal of the World Ship Society.

> The tanker sighted a derelict about 300 miles west of Walvis Bay, South Africa, a vessel which was obviously an American-built Liberty and riding very deep in the water. Through the glasses they could identify the V (I want assistance) code pennant flying from the signal halyards but there was no sign of life on board. It being a clear, fine day, with a moderate sea, the tanker's captain, B. Diricq, stopped his ship and sent a motorboat in charge of the second mate to see if there was anyone on board the vessel in need of help.
>
> The boarding party found no sign of life on the derelict . . . the Greek S. S. *Odysion*. During this time, the British tanker *British Realm* came up . . . saying it had been abandoned and that the crew had been picked up by the Liberian tanker *Marilou*.
>
> Even while the boarding party was leaving the derelict for their motorboat, they heard a deep rumbling sound from inside the deserted vessel and a geyser of water shot out of number three hold, tossing

> hatch covers high in the air. These were the final death throes for the *Odysion* and so quickly did she go down after that—no more than ten seconds—that the second mate and an able seaman found themselves swimming among the debris of the sunken ship. Fortunately, both men were wearing life preservers.

In September of 1967, the senior deputy chairman of Lloyds, Paul Dixey, said that Liberty ships as a whole were being used for the transport of scrap, metal ores and grain "where operation is marginal, maintenance minimal and profit frequently insufficient to provide reserve even for survey expenses." Rough usage, according to Dixey, weakened the ships through the holing of transverse bulkheads by scrap metal; by lack of painting and preservation of metal in critical areas; and by severe corroding of plates at the waterline because of poor maintenance. He charged that many ships were operating with deficiencies that would never pass the more stringent classification agencies such as Lloyds. The casualty list for that year showed that insurors were hit hard by widespread accidents and losses to EC2s all over the world.

Rough usage helped speed the end for many such ships. The SS *Grand* (*Walter Husband, Ivybank, Winona, Kondor*) sailed from San Francisco for Yokohama in 1966, loaded down to her marks with scrap metal, and broke up during heavy weather. Of her crew of 44, 21 drowned. The *Maria Despina* (*Washington Allston, Thorbecke, Lutterkerk*), flying the Lebanese flag, also broke up when she went aground outside Alexandria in March of 1966.

It was a bad year for the aging EC2s. The *White Mountain* (*Mary Bickerdyke*), operating under the Liberian flag, collided with the British *Funabashi* in February, near Singapore, and capsized while *Funabashi* was beached. The Liberian *Pensacola* (*John Leckie*) sank that same month in Mona Passage in the Caribbean when leaks developed and pumps were unable to handle the flooding.

Another Liberian Liberty, the *Rockport* (*Wilfred R. Belevue, Edison Mariner, Ionnis Daskalelis*), foundered in February in the North Pacific when her hull split on a voyage from Vancouver to Japan. The *Elias Dayfas II* (*Raymond Clapper, Thrylos, Master Nicky, T. J. Stevenson*) was en route from Galveston to Vietnam on 5 July 1966 when leaks developed off Yucatan. She was taken in tow by the tanker *Sea Pioneer*, but fire broke out and she sank.

The Lebanese *Suerte* (*Lionel Copley, Sambrake, City of Chelmsford, San George*) went aground near Halifax in January of 1962, was adjudged unfit for further use, and was towed 250 miles out to sea and scuttled. No one explained

why a vessel that could survive such a tow was not taken to a scrap yard or repaired instead of being sunk. The *Faro* (*James Fenimore Cooper*) went aground near Tokyo Bay during a storm in January of 1966. The *Lampsis* (*J. D. Ross*), owned by the Proteus Shipping Company of Greece, sank in the same month about 600 miles off Bermuda. The Lebanese *Alheli* (*Henry Dodge*) developed leaks on a trans-Atlantic trip and sank two days after being abandoned about 900 miles east of Bermuda in April of 1968.

After 20 years of service, some weak and leaky hulls could take no more. Such was the *Marcar* (*George H. Thomas, Aristarchos, Resolute, Cape Palmas*), a Liberian Liberty that went down in the harbor of St. Vincent, Cape Verde Islands. Leaks on a trans-Atlantic voyage also spelled the end of the *Orione* (*Jesse Billingsley*), which arrived at Fayal in February of 1969 in an unseaworthy condition, was towed to Vigo, and then was sold to Italian shipbreakers. The *Conchita* (*Samconon*) developed leaks on a voyage from Mormugao, India, to Poland and sank in July of 1967 about 300 miles southwest of the Seychelles.

Throughout the year Lloyds reported many Liberty ship casualties. The Liberian *Demetrios* (*Charles Paddock, Kenneth H. Stevenson, Skiathos*) was abandoned by her crew in a sinking condition on 12 July near Diego Juarez. The *Leftric* (*Jacob H. Gallagher*), flying the Lebanese flag, went aground at Mormugao, hit a breakwater, broke in two, and became a total loss.

The Panamanian SS *Pinguino* (*George Gamblin*) foundered 90 miles from Rio de Janeiro in 1967 but all hands were saved. The Liberian *Thimars* (*Oakley Wood, Keystone State, Georges Fribourg, Magallanes, Alexander S.M.*) was a total loss when she went aground near Sarawak in 1967. A 1966 casualty was the *Zaneta* (*Sara Teasdale, California Sun, Hera, Leotric, Oradour*), which started to leak in the Arabian sea and was abandoned on 19 June.

Libertys that had managed to avoid serious accidents for two decades were afflicted with an epidemic of engine room fires and explosions in 1967. The *Kostis A. Georgilis* (*Samconstant*) had such an accident in November of 1967 and was beached on Cocos Island in the Indian Ocean. The Liberian-flag *California Sun* (*Henry C. Wallace, Trocadero, Percy Jordan*) had an engine room explosion and fire in November, 1967, which gutted the ship.

Hardy survivors of wartime convoy routes and beachheads, Libertys often went down through old age and neglect. The *Omega* (*Thomas H. Sumner*) was abandoned by her crew on 13 November 1966, after the hull cracked at sea. The *Tegean* (*James W. Fannin*) went aground that month near Halifax and became

a total loss. The *Elenik* (*Johns Hopkins*) broke in two and foundered on 29 September 1966 about eight miles from Thevenard Island, Western Australia. The *Ionnis K.* (*Samsoaring*) was abandoned after going aground off Vung Tau in January of 1968.

□

More than a few Liberty ships sank under dubious circumstances in times of falling freight rates or when insurance was pushed so unreasonably high as to make it unprofitable to operate with low-paying cargoes. There have been a number of Liberty ships, sunk or stranded, for which insurance firms were reluctant to pay claims.

Owners of some ships that sank under wholly legitimate circumstances spent large sums of money for legal fees in trying to collect insurance claims on their vessels, and some were unsuccessful in their claims. Said one Liberty shipowner:

> In some circumstances, marine underwriters have taken the position that no 'insured peril' had transpired even though the ship may be sitting on the bottom, be stranded on a reef, or be towed in, gutted by fire. By taking this position, they throw the burden of proving an 'insured peril' upon the owner. In other words, the claim itself is not denied, but the underwriters conveniently ignore the fact that a casualty has occurred. The only recourse to the assured is to bring suit against the underwriters, which is a very costly affair and is quite often an exercise in futility. In one case in London, the owners carried their suit all the way to the House of Lords. The suit was ultimately decided in the owners' favor, but legal fees and expenses were almost as much as the insured valuation of the ship. With marine underwriters faring very poorly in recent years on all classes of insured tonnage, including newly built, high-value ships, underwriters have at times abused the owners of relatively low valued warbuilt tonnage by refusing to admit claim through denial of peril. Numerous legitimate total losses and constructive total losses have been settled through negotiation as 'compromised' total losses at considerably less than policy value, because the time and legal expenses involved in collecting under litigation were utilized as discount leverage by underwaters against owners of Liberty ship tonnage.

Whatever the reason for their loss, the hulks of many EC2s can still be seen around the world, and some of them will probably last for many years. The *White*

Eagle (*George Weems, Myken, Cavolid, Cocle*) ran hard and fast on San Clemente Island off the California coast in what most mariners would describe as fair weather. For many months she sat serenely on the rocks, exactly as if she were at a pier, ready to sail as soon as the cargo was loaded and the hatches battened down. She will probably be there for years to come. The *Francis Preston Blair* went aground on Saumarez Reef, off Queensland, Australia, in July of 1945, and twenty five years later appeared in good condition, sitting on an even keel as if she was in a graving dock.

Some Liberty ships escaped all the perils of the sea, only to be abandoned when their owners were overcome by financial difficulties. One such ship was the *Valiant Enterprise* (*Harold T. Andrews, Bassa, Spiro Makris, Robertville*) owned by the Enterprise Steamship Company, an American corporation. She became the "ghost ship" of Colombo after she entered that port in 1960 and was held for unpaid harbor dues and other debts. By 1966 so much water had collected in her holds from rain and leaks that alarmed officials, afraid she might sink inside the port, had her towed six miles away from the harbor area. She lay at anchor there for many more months, until she was finally sold to Japan for scrapping.

In a similar case of abandonment, 15 crewmen of the scrap iron-laden *Protostatis* (*John Philip Sousa, Erato, Paxiarchis*) were marooned when their Greek-owned, Panamanian-registered freighter went aground on Wolfe Island in the St. Laurence River in November of 1965. Her owner, Marcus Lemos of London, told the Canadian government that he was abandoning the ship. After most of the officers left for home, the first mate and 15 penniless crewmen remained on board the hulk without pay, living without light or heat, far from their homes in Greece.

Attorney George Speal of Kingston, Ontario, took an interest in their plight, saw that townspeople supplied them with food, and arranged for them to receive back pay and transportation to Greece. The ship was later refloated, taken to Toronto and sold; then towed to Spain for scrapping.

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Some Libertys became mysteries of the sea, joining the long line of ships that left port never to return. In 1948 the *Samkey* with a crew of 40 men left England for Havana, made a routine position report off the Azores, and was never heard of again. No exceptionally heavy weather was reported from the area at the time, and the chance of hitting a floating World War II mine in that region was most

remote. Explosion or fire was the most likely explanation, but whatever her fate, it came so suddenly that the radio operator sent no SOS. The ship was listed at Lloyds as "presumed lost and missing with all hands."

A more gruesome mystery involved the SS *Pomona* (*John Carroll, Solmar, Kronviken*), a Liberty owned by Brazilians, flying the Liberian flag, and carrying a crew of Norwegians, West Indians, Spaniards, and Finns when she left Norway for the Caribbean in October of 1943 under the command of Captain Jacob Natvig.

The *Pomona* had been at sea only a few days when one of the Finns went berserk and had to be subdued. They landed him in Bilbao, Spain. Then there were bloody fights and drunken binges among the crew. A seaman jumped overboard but was recovered, half drowned. En route to California, one seaman tried to commit suicide and another threatened to cut the captain's throat with a knife.

A few days after leaving San Pedro with scrap iron for Taiwan in May of 1964, Captain Natvig was seen drinking with Chief Steward Ander Baardsen. Two days later, First Mate Alf Olsen went to the Captain's cabin to find him in his bunk with his skull smashed and a bloody fireaxe on the deck beside him. Olsen took command and sailed the ship to Honolulu. While the "hell ship" headed for port, edgy crewmen slept with lights burning and walked warily along decks and passageways, for they knew there was a maniacal killer loose among them.

At Honolulu there was an investigation, purely routine. No one was likely to be punished, because the crime had been committed on the high seas beyond American jurisdiction, and Liberian authorities were half the world away.

The investigation produced no clues. Crewmen could offer no reason as to why anyone would kill the captain; indeed he had been rarely seen on deck throughout the trip, leaving the ship's navigation and operation to the first mate. There were no fingerprints on the axe. No members of the crew were arraigned or charged, although two Norwegian detectives flew to Honolulu and took Baardsen back to Oslo with them. When authorities eventually released the vessel and the time came for it to clear for the Orient, most of the crew refused to sail and demanded release from the ship's articles on the grounds that their lives were in danger. A new crew was hired, and the *Pomona* sailed with a Chinese crew, Norwegian officers, and a Brazilian radio operator. By that time the "hell ship" had become a jinx ship as well—100 miles out of Honolulu, there was a fire in the engine

room and the 33 crewmen abandoned ship. They later returned on board, put out the fire, and rode the ill-fated *Pomona* back to Honolulu at the end of a towline.

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In the 18 months after the start of the Korean War in 1950, more than 600 ships, including many Libertys, were withdrawn from reserve fleets. At that time, it cost about $100,000 to reactivate a Liberty ship and another $50,000 to lay her up again when her emergency usefulness was over. When Egypt closed the Suez Canal in 1956, more than 200 ships were taken out of reserve fleets to meet increased shipping demands. No Libertys were withdrawn from the mothball fleets for the Vietnam War, although all laid-up Victory ships were placed in service. At one time, more than 175 of them were operating on the Vietnam shuttle from American ports.

□

During the 1950s, the U. S. Maritime Administration experimented with different methods of powering Liberty ships to give them more speed. The idea was to possibly upgrade a number of them for more profitable peacetime use as well as for greater transport potential in time of war. As part of this program, the *John Sergeant*, a former World War II POW ferry, became the first large ocean-going vessel to be powered with a gas turbine. Her conventional propeller was replaced by a controllable-pitch propeller. A new bow lengthened the hull by 25 feet. After several voyages, the alteration was deemed successful, but no more ships received this treatment.

Another experiment was made when the *Benjamin Chew* was given a steam turbine, which boosted her speed to 15.3 knots on a trans-Atlantic test trip. The *Thomas Nelson* was equipped with a diesel engine, and the *William Patterson* was powered with a free-piston gas turbine. All four ships were prototypes and no other conversions were made.

To make them more competitive with newer ships and large, new carriers specially designed for the bulk-cargo trades, many Libertys were jumboized—lengthened by cutting the ship in two and inserting a 70-foot section between number two and three holds. The additional space enabled a vessel to carry up to 1,500 more tons of cargo with about two feet less draft.

PART SEVEN

'THE MOTHBALL FLEET' – The US Merchant Fleet Reserve

As early as 1943 the Maritime Commission and the War Shipping Administration appointed a Post-War Planning Committee to survey the country's probable post-war shipping requirements and to prepare plans for a merchant marine adequate both for commerce and for defence of the country.

The outcome of this planning, combined with actual post-war requirement, the use of all types of ships and the dispersal of a great many vessels among America's allies still left the United States with a vast shipping surplus.

So the National Defense Reserve Fleet was created by an Act of Congress in 1946, and in the same year the Maritime Commission was granted permission to sell surplus government-owned war-built vessels for commercial operation.

During the war and in the immediate post-war period many vessels were operated on behalf of the American Government as vast tonnages needed conveyance to all parts of the world, but within a year or two of the cessation of hostilities the shipping industry as a whole was beginning to find its way towards a peace-time standard, and government-operated ships were therefore needed less.

Accordingly, more Liberties retired into honourable lay-up and joined the many others which had gone straight into 'mothball' reserve from the holocaust of war. Some however, still under government ownership, did continue to operate at differing times over the forthcoming years as circumstances and occasions demanded.

Generally, during the war, vessels were placed in service under General Agency Agreement. Under this agreement a private shipowner was appointed as a general agent and was responsible for providing crews and stores for the ship, overseeing repairs and carrying out similar services in return for government compensation for expenses, plus a fee for overheads.

In post-war times some agreements were changed to bareboat charter, but usually such charters were only granted in times of severe commercial shipping shortage, and permitted private companies to charter government-owned ships to provide an essential service.

Some Liberty ships, therefore, although generally classified under reserve status, did have spells of active service between times, and one vessel, the *Harry L. Glucksman* serves to illustrate this point.

From her completion in 1944 until November 1946 she was operated under an agency agreement by the Merchants & Miners Transportation Company. From the latter date and until May 1948, when she went into the reserve fleet at Wilmington, she operated under bareboat charter by the Isthmian Steamship Company.

Returning to service from November 1951 until June 1952 she ran for the United States Navigation Company under agency terms. After another stay in the Wilmington fleet she was again withdrawn, in November 1956, and bareboat chartered to the American Coal Shipping Inc. She returned to reserve, this time the James River site, in March 1958.

In fact this vessel, during this same year, was one of the last laid-up Liberties to pass a Special Survey. Subsequently her peak condition over the fast-fading qualities of other vessels made her an obvious choice when she was later transferred to the USN, but even then she was stripped to a bare hull when rebuilt as a special conversion.

The reserve fleet, therefore, was originally formed with surplus war-built vessels and included those vessels which remained unsold when the authority for their sale expired in 1951.

In all, a total of eight separate sites were established to accommodate the ships of this large fleet. These sites were situated at:

(1) Hudson River, near Nyack, New York.
(2) James River, near Newport News, Virginia.
(3) Wilmington, North Carolina.
(4) Mobile, Alabama.
(5) Beaumont, Texas.
(6) Suisun Bay, San Francisco, California.
(7) Columbia River, Astoria, Oregon.
(8) Puget Sound, Olympia, Washington.

Note: The numbers shown against each of these sites have been added by the authors purely for the purpose of reference to this text. Where applicable, vessels still in reserve are shown as such whilst the number used as a suffix indicates the site of lay-up.

From these fleets of maintained vessels of all types were drawn the surplus merchantmen to meet supply needs during emergencies such as the Korean crisis, the first Suez Canal closing – and latterly for use in supplying the armed services in Vietnam.

During 1954 a large number of laid-up Liberty ships were used as grain storage ships during an American grain surplus. Eighty-four vessels of the Astoria fleet were loaded at that port or at Portland; forty-three from Olympia were similarly loaded at Seattle and Tacoma, and other vessels from the Hudson and James River sites were loaded at Baltimore. The first vessel loaded, at Seattle in mid-March of the year, was the *George D. Prentice.*

Many of the first Liberties to go into reserve still carried scars and signs of war damage. Yet others, damaged by marine hazards, had been laid aside as unworthy of even minor repair whilst so many could readily take their place, so it was that the earliest disposals for scrapping were those in a generally poor condition. A random example of such minor damage – readily repairable under normal circumstances, shows that the *R.S. Wilson* (qv) was declared a constructive total loss in 1946 mainly because, with such a surfeit of tonnage, this one particular ship was not really needed and therefore any repairs would have been uneconomic. And yet, although a CTL she remained laid-up for thirteen more years before her final disposal.

As time progressed through the 1950s and 1960s and Liberties became further obsolete due to age and condition, the Maritime Administration continued to eliminate the remaining war-damaged, weakened and unstrengthened ships, and in the period from 1957 to 1966 sold 832 of them for scrap.

Block disposals became the customary replacement of uneconomic single-ship deals, and an interesting block deal involving the purchase, for scrap, of thirty-five Liberties by Bethlehem Steel Co included the famous first-ever Liberty ship, the *Patrick Henry.* And so, after some twelve years of idleness the very first product from the world's greatest production line met the inglorious fate of being scrapped by those who actually built her, for she was towed to Baltimore and demolished by an associated company of her builders.

Another interesting 'potential' deal occurred in 1960 when tenders were invited for the block purchase of 219 laid-up ships – mostly Liberties – intended for scrapping in the USA, as well as for an additional fifty for scrapping abroad. But at expiry time no bids for the ships had been received.

Early in 1968 the Maritime Administration announced the block sale, for 900,000 dollars, of the last remaining twenty-two ships, all Liberties, at the Wilmington site. Among these were vessels with very famous commemorative names, as for instance the *Henry Ward Beecher* (a Brooklyn clergyman), the *Button Gwinnett* (a signatory of the Declaration of Independence), the *Joseph E. Johnston*, the *George E. Pickett* and the *Pierre Soule* (Confederate generals) and the *Dwight W. Morrow* (a diplomat).

The removal of these vessels from the Cape Fear river was to effect the closing-down of this location, for all the other vessels — as many as 427 Liberty ships were once anchored at this site — had previously been sold either for scrap or for non-transportation use. The purchasers of the twenty-two ships, Union Minerals & Alloys Corporation of New York, had just previously bought thirty-four other ships from the US Government and this total of fifty-six vessels formed a total investment of some 2½ million dollars within a twelve-month period. These buyers do not have their own shipbreaking-premises but instead use 'outside' breakers on a contract basis. Many of their purchases are demolished at two scrapyards which also figure prominently in the shipbreaking industry, namely those at Kearny and at Panama City. At the time of the Wilmington site closure the Astoria site was undergoing a similar fate, this following the removal, also for scrap, of the last of the laid-up vessels from the location.

At the time of writing therefore, six reserve fleet sites remain, and even these are gradually being depleted with the continuing sale of obsolete vessels.

An earlier form of disposal of Liberty ships from the reserve fleets commenced in 1958 when the US Army, faced with the problem of disposing of many tons of chemical warfare gas, loaded it into the hulk of the *William C. Ralston* (qv) and then scuttled the ship at sea.

Prior to this the two usual methods of disposing of deteriorated explosives and armaments were those of dumping at sea by use of hopper-door barges or the loading of it aboard a ship, which was then towed to sea and the material then man-handled over the side. A third but minor method of disposal was to burn explosives ashore purely for the residual scrap metal value of its containers, but all these methods were costly and extremely dangerous.

In 1963 the authorities enquired into the condition of ammunition stocks — much of which had been in store since the Korean crisis, and some of which dated from the days of World War II. The majority was found in good order but some deteriorated material required immediate and cheap disposal.

And so 'Operation Chase' was conceived, and in this the USN acquired, through the Military Sea Transportation Service, obsolete vessels from the reserve fleet. Stripped of all useful gear, they were loaded with the unwanted material, towed to sea and scuttled in deep water.

The first vessel so used was the *John F. Shafroth* (qv), scuttled west of the Golden Gate. The second 'Chase' ship, the *Village* (ex *Joseph N. Dinand*, qv) exploded shortly after sinking. The detonation registered on seismic equipment throughout the world and it also aroused the interest of the (American) Office of Naval Research. Subsequently sinkings were instrumented and deliberate detonations carefully controlled. From these experiments were monitored distinctions between man-made and natural seismic shocks — invaluable information in the detection of underwater nuclear explosions.

Further Liberty ships scuttled under 'Chase' were the *Santiago Iglesias*, the *Isaac Van Zandt*, the *Horace Greeley*, the *Michael J. Monahan* and the *Corporal Eric G. Gibson*. The *Robert Louis Stevenson*, also destined to be scuttled and detonated, defied the might of the USN and chose her own demise instead of her allotted doom.

So far, more than 50,000 tons of volatile materials have been disposed of, and at time of writing three further 'Chase' sinkings are still scheduled. These will conclude the present series of operations.

Reserve ships (of all types) not destined for the scrapyard or for sale for non-transportation use are in clearly defined categories of 'emergency reserve' or 'priority'. Priority ships have the designation of one to six, in accordance with their age, type and condition. Those in Priority One receive the most intensive maintenance, whilst those at the other end of the scale in Priority Six and in Emergency Reserve receive much less.

At the eight reserve fleet sites crews of skilled technicians were engaged in administering, policing and preserving the ships and carrying out a carefully regulated programme of maintenance, preservation and minor repair. This work served the dual purpose of keeping ships in varying states of readiness and enabled them to be put back into service at a minimal cost.

However, it should be remembered that maintenance work on Liberty ships was generally abandoned many years ago, and most of them now receive no attention at all.

The preservation work was scheduled in four phases. Hulls and decks were painted; boilers, engines and auxiliaries were coated internally with metal-conditioning compound; motors and generators were stripped and cleaned, treated with preservatives and re-assembled, and underwater areas were fitted with anodes to arrest corrosion.

An interesting sidelight on subsequent re-activation was the recent American concern at the cost of bringing ships from reserve for service to Vietnam. The first decision to re-activate vessels — mainly of the fast 'Victory' type but including the odd Liberty — estimated recommissioning costs at 325,000 dollars per ship. But rising costs soon increased the figure to over half a million dollars each, this resulting largely from ship repairers complaints of inadequate funds and which, in turn, resulted in costly breakdowns among the first batch delivered.

By the end of 1966 and whilst still looking for more tonnage, the Pentagon was reluctant to consider bringing forward the remaining ships (of all types) in reasonable condition in the reserve fleets, and in fact preferred to charter ships already in service.

But to return for a moment to the year of 1961: American Public Law 86—575, the Ship Exchange Act, permitted non-subsidised obsolete US-flag tonnage to be traded in, on a price differential basis, for better class war-built ships from the reserve fleets.

By mid-1961 the first three exchanges had been effected and these included the Liberty ship *Albatross* (ex *Stage Door Canteen*).

Usually the returned ships joined the laid-up tonnage and afterwards were generally very soon sold to shipbreakers.

Meantime, sales for scrapping continued unabated, further assisted by the Ship Sale Act which permitted disposal of laid-up tonnage for scrap by foreign nationals. A peak was reached during 1961, when 176 Liberties (including 'active' ones) were disposed of. However, it should be borne in mind that the year of sale does not necessarily indicate the actual date of scrapping, for particularly in the USA, vessels are often not scrapped until several years after their purchase by the shipbreakers. Interesting examples of this are two Liberties built by Todd Houston under yard Nos 171 and 177 and which were sold for scrap early in 1964. And yet during 1969 both vessels were still lying at Philadelphia, their scrapping postponed 'due to the Vietnam situation'.

In January of 1962 the total of 1,872 reserve vessels still included 1,051 Liberties, but the momentum of scrapping them slackened so that three years later this latter figure was only down to 859.

By mid-1965 some 800 Liberties were listed in a laid-up total of 1,579 ships, of which 231 were earmarked for scrap, 388 were in emergency grade and the remaining 960 were priority vessels. Twelve months later the figure for reserve Liberties was 722, although some others still came under the jurisdiction of the US armed forces and many of these were in military reserve.

It is of interest that at the same date nearly 700 Liberties were still flying the flags of many nations throughout the world, representing over 25 per cent of all those built.

Further reductions to the reserve fleet showed that the previous figure of 722 Liberty ships had reduced, at the end of December 1968, to 462 vessels. In addition 83 vessels of the same type still remained in military reserve.

During the same period of time the world-wide commercially-owned Liberty ship fleet had, of course, also been further depleted. Later — in July 1969 — those remaining under this form of ownership numbered some 300 vessels, whilst the 462 reserve ships had reduced to 428. Those in military reserve remained unaltered.

With the ceaseless advance of time the great laid-up fleets began to diminish, first in a trickle, then with greater rapidity until the question was raised — were the surviving ships to be regarded merely as scrap potential or historic fact?

It was then that the Liberty Ship Memorial Programme was formed. Its two sponsors — the American Merchant Marine Institute and the American Institute of Marine Underwriters — are, respectively, the major trade associations in the fields of American-flag ocean shipping and in marine insurance. Their combined efforts to preserve the memory of Liberty ships and to call public attention to the war service of the American Merchant Marine receives the full co-operation of the Maritime Administration.

As part of this programme the builders nameplates from ships destined for scrap are formally presented with proper ceremony and publicity to towns, organisations, communities or areas of the country associated with the famous Americans after whom the ships were named.

A number of such presentations are noted, for interest, within the text.

As will be seen, many vessels have reached the end of their lives and have been detailed as 'scrapped'. However, in some cases this could be more accurately described as 'dismantled' — although it has not proved possible in this text to differentiate between the two descriptions for individual vessels.

At one time reserve fleet ships were sold, except in some special cases, with the proviso that they be scrapped within the USA, but permitting the residual steel plates and structural members to be used in the construction and repair of other vessels – providing that they were reduced to individual pieces when removed from the old hulls.

In 1965 a modification to these conditions allowed a wider use of the materials. The revision permitted re-use of portions of the hulls and hull assemblies in whatever size sections the purchaser wished, providing essential structural parts were demolished and the ships ceased to exist in their usual forms.

And so some Liberties, having been only dismantled, do in fact almost 'sail again', though in a somewhat different form and guise.

Concerned in this new business venture of using materials so salved are a number of firms and localities which figure prominently in the Liberty ship shipbreaking programme.

A new five-acre shipyard with three building ways was recently constructed at Green Cove Springs, Florida, and was (initially) to build fifty cargo barges by using the steel plates obtained from scrapped Liberty ships.

The order for these barges was placed by a group of metal merchants formed by Southeastern Rail & Steel Company of Jacksonville, Zidell Explorations Inc, of Portland, Oregon, and steel merchants Hugo Neu of New York. The president of Southeastern Rail is the owner of the large shipbreaking yard at Panama City, Florida – the site of the J.A. Jones Liberty ship shipyard – whilst Southeastern, Zidell and Neu are themselves sole suppliers of all material used in the new barge construction.

Steel plates taken from the scrapped ships are rolled and shaped at Panama City for welding into prefabricated sections some 60 ft by 20 ft. These sections are then taken by barge to the new shipyard for incorporation in the new barges – which are 150 ft long, have a beam of 40 ft, a depth of 11 ft and a deadweight of some 1,800 tons.

Barges of a different type were due to figure in the builders itinerary after completion of their initial programme.

About the time this new Florida yard commenced operations the shipyard of Zidell Explorations at Portland also started the construction of cargo barges using similar Liberty ship steel plates.

Here the initial order was for eighteen barges, these being vessels 200 ft long by 45 ft beam and with a depth of 15 ft.

At this same location Zidell have operated their large shipbreaking yard for very many years.

Perhaps the most important point of these ventures – at least to historians – is that these barge-building enterprises will yet preserve 'remains' of Liberty ships when even the memories of the ships themselves have all but faded.

According to the present plans of the Maritime Administration, only thirty-seven ships will remain in reserve after 1971. All the Liberty ships still currently laid up will have been disposed of by that time, together with hundreds of other types of ships. The thirty-seven vessels considered useful beyond 1971 – but only until 1975 – will all be 30 years of age by then, and are all 'Victory' type cargo ships.

In the light of the foregoing, a decision reached by the United States Court of Appeals during December 1968 was an interesting one. The result of this decision was that America's 'mothball' fleet of merchant ships had to be considered for use in moving military cargo before foreign-flag vessels.

The Court's ruling came in a case brought by the National Maritime Union, which protested against the use by the Military Sea Transportation Service of foreign ships to transport military cargo to Vietnam, without first considering the use of United States vessels out of commission, but being kept in reserve for future use in emergencies.

However, the judgment left the American Government 'with wide discretion to determine the availability, or otherwise, of mothballed ships for military purposes'.

'They mark our passage as a race of men,
Earth will not see such ships as those again'.
John Masefield

Liberties in the Bay Area

BUILT BY MARINSHIP CORPORATION

In February 1942 a directive from President Roosevelt demanded the 'impossible' task of increasing the tempo of shipbuilding; and the previous objective of 18 million tons of new shipping during 1942-1943 was raised to 24 million, this being 9 million tons in 1942 and 15 million in 1943.

The shipways planned and those already in operation were quite unable to increase their schedules to this great extent and it became necessary to add further slips to these existing yards and to create new yards in new locations. On the East Coast the first few Liberties had been launched; on the Gulf the yards were only just commencing, and on the West Coast, Liberties were ready for launching and British 'Ocean' type vessels were under rapid construction. So it was to this latter area that the Maritime Commission turned for the siting of another yard and, due to its outstanding record, they again looked to the Kaiser organisation for assistance.

Each company within Kaiser's Six Services group was invited to submit proposals for a new yard which would produce ships during 1942.

The initial contract for the yard and for Liberty ships was given to the W.A. Bechtel partnership. Management and workers were enlisted from allied companies, steel for the first ships was fabricated more than 400 miles away at the associated Calship plant and the venture, under the name of the Marinship Corporation, was successful in getting ship construction under way very rapidly.

The yard was located at Sausalito, Marin County, California, on the north west side of San Francisco Bay and was situated so as to attract labour which could not easily reach other shipyards across the bay. It was commenced as a six-way yard, this number then being presumed to be adequate for maintaining a steady production flow.

In accordance with the terms of the contract the first delivery was made in the latter part of 1942, and before the end of this same year five vessels had been completed.

At sea at around this same time shipping losses had reached a high peak and attacks by the enemy on oil tankers had proved so successful that there was a dire need of further tanker tonnage. Accordingly, the Marinship yard, designed to produce a relatively simple ship, was given large additions to its facilities and had its remaining Liberty contracts cancelled. These were replaced by ones which authorised construction of various types of tankers.

Pacific Bastion, 1797–1946

The story of the San Francisco Port of Embarkation is historically the story of Fort Mason, since up to the expansion period immediately preceding Pearl Harbor the Port administration was confined strictly to the bounds of this military installation at the foot of Van Ness Avenue in present-day San Francisco. Fort Mason developed from the United States Military Reservation created in 1850, and it was from this fortification overlooking the Golden Gate and San Francisco Bay that the San Francisco Quartermaster Depot emerged in 1906 and finally in 1932 the San Francisco Port of Embarkation.

As early as 1797 the present site of Fort Mason was seen as a strategic spot. As implied by its early Spanish name of Punta Medanos (point jutting out of sand dunes), the bluff commanded the shoreline inward from the Presidio and the Golden Gate and the stretch of water between this shore and Alcatraz Island. The point extending out into the Bay terminates the smooth shore line running along the "Embarcadero," San Francisco's pier-lined waterfront, out to the picturesque world-renowned Fisherman's Wharf and to the newly developed Aquatic Park adjacent to Fort Mason. Its heights overlook and form an imaginary division between San Francisco's North Beach to the east and the Marina spreading westward toward the Presidio.

This promontory of Punta Medanos was recognized in the year 1797 by the Spanish governor of the California territory, Don Diego de Borcia, when he commanded Alberto de Cordoba at the Presidio to fortify the site as a subfort of that installation. Accordingly five bronze cannon cast in Manila were set up at the Point, bringing into existence Bateria San José, the Battery of Saint Joseph.

Borcia's wish to strengthen the harbor's fortifications had resulted from his desire to keep all foreign ships from landing on the shores of "La Yerba Buena," Spanish name for North Beach at that time and later for all of the San Francisco community. Yerba Buena (literally "good herb," pertaining

to the wild mint abounding in the region) was not officially changed to San Francisco until 1847 when the settlement had grown to 400 population.

The Spanish governor's concern was inspired by the visit of the British explorer Vancouver, whose name is now borne by the harbor cities in British Columbia and the state of Washington. Vancouver sailed in through the Golden Gate in 1792 and again in 1793 with his ship *Discovery* to anchor in the cove of present-day Aquatic Park.

Bateria San José did not materialize as a potent installation, possibly because the visits of foreign explorers did not continue as Governor Borcia had expected. The Spanish garrison neglected the battery pieces to the extent that in 1806 the installation was practically abandoned by Governor José Joaquin de Arrillaga after he decided the guns had been rendered useless from exposure. Long before the advent of United States occupation, Bateria San José had vanished, and only the name San José remained to identify the site of the former Punta Medanos.

Then in 1848 a joint Navy and Engineering Commission was appointed to select points of defense for California, one of them being Point San José. The commission's recommendation to President Millard Fillmore brought about his decision on November 6, 1850, to make Point San José, an area of about one hundred acres, a United States Military Reservation. By this time the name Point San José was giving way to still another name, Black Point, which came into use because of the thick fringe of mountain laurel growing from the water's edge into the sand dunes. Although Black Point was a military reservation, nothing was done to fortify it for more than a decade in spite of the fact that plans had been drawn in 1854.

During this period almost one-third of the acreage along the southern edge of the tract was ceded back to the rapidly growing city of San Francisco, reducing the area to 68.5 acres.

The singular lack of development of the reservation by the government gave rise to a unique situation. The usual mode of acquiring and holding land during the period was the exercising of "squatter's rights," although "squatting" on a military reservation was not customary. Custom did not deter a banker, Mark Brunnigan, from employing this means to develop the acreage at his own risk.

In 1859 the dashing Colonel John C. Frémont, pathfinder, soldier, and political leader, was seeking a quiet abode for his wife, Jessie, who was recuperating from an illness. His search brought him to the north shore of San Francisco and he was delighted with the beauty and seclusion offered

by the Point. Its charms were made available to him by Banker Brunnigan when, for the sum of $42,000, he was induced to part with a house and the very questionable title to twelve acres of land. It was not until recent years, after three-quarters of a century of litigation, that the United States Supreme Court ruled that the federal government was not responsible to Frémont and his heirs for their loss of the property made inevitable by the advent of the Civil War. Many involved circumstances tended to make the legal battle a bitterly contested one.

During their residence at Black Point, Frémont and his "Immortal Wife," the daughter of Senator Benton of Missouri, made many friends among the group of neighbors who settled there. Their home became the gathering place of many notable visitors, among them the aspiring young writer Bret Harte and orator Thomas Starr King, one of the apostles of the Union cause in California.

Although all the squatters on the reservation were dispossessed when Black Point was occupied by Union troops in 1863, only Frémont's home "Porter's Lodge" and several others were razed to make way for gun emplacements. Other homes were converted into officers' quarters supplementing the buildings, storehouses, and barracks which were erected for the need of the soldiers stationed at the installation. One of Frémont's neighbors, Leonidas K. Haskell, who became a major in the Civil War, had built the structure which later became the residence of forty-five commanding generals of the Pacific commands which finally evolved as the Ninth Service Command and the Western Defense Command. These included such historic names as Generals McDowell, Halleck, Schofield, Sheridan, and Pope of Civil War fame, and later General MacArthur (father of General Douglas MacArthur) and Generals Funston, Bliss, Liggett, Hines, Craig, Malone, and DeWitt. Today this landmark houses the facilities of the Fort Mason Officers' Mess.

In 1872 the old buildings on the reservation were reconditioned and a guardhouse, hospital, and supply depot were built. In addition the commanding general's residence was remodeled in 1876 when General McDowell, returning to the command of the Department of the Pacific, secured $10,000 from Congress for that purpose.

The mounting of six 10-pound, three 15-pound, and six 24-pound guns at that time elevated Black Point to the dignity of a "fort." Ten years later, in 1882, the post lost its old name of Black Point when it was formally dedicated as "Fort Mason" in honor of Brevet Brigadier General Richard

Barnes Mason, first military governor of California from 1847 to 1849. It was by his order that the first military survey was made in 1848 of the land later to bear his name.

Meanwhile the installation at Black Point had become closely identified with the San Francisco Quartermaster Depot, established in 1847 by Captain Joseph L. Folsom as ordered by General Stephen W. Kearny. In 1863 a clothing depot had been opened at the reservation to take care of the recently arrived troops. Then in 1866, when the commanding general of the Pacific took up residence in the old Haskell house at the Point, the Depot Quartermaster was in constant communication with this installation, maintaining a small office at the reservation. However, his main office and his warehouses remained in the city of San Francisco itself, at 36 New Montgomery Street just back of the Palace Hotel. The depot stayed there for many years until destiny, in the form of the earthquake and fire of 1906, sent it toward its ultimate location at Fort Mason.

But destiny's forces already were at work molding the foundations of the Port of Embarkation of a later day. The outbreak of the Spanish-American War in 1898 gave impetus to the organization of the Army Transport Service, forerunner of the Water Division in today's Port of Embarkation. Admiral Dewey's naval victory at Manila created an immediate need for troops to take and hold the newly won territory. Receiving the report of the battle of Manila Bay, the War Department changed its orders for the volunteers on the Pacific Coast who had been intended for the Cuban expedition and ordered them to remain in San Francisco to await transportation to the Philippines.

The supply and fitting out of these regiments devolved upon the San Francisco Depot Quartermaster. He not only had to supply the 5,000 troops quartered at the Presidio and Fort Mason, but he had to improvise a transport service to the Orient as well. The transportation of men and animals across the Pacific during wartime and the landing of them in a hostile country fit for immediate service were problems never before encountered in our history as a nation. The Philippines expedition was the first military force to leave the United States for a foreign war.* Transport operations were begun in May 1898, when twelve companies of California Volunteers marched through the city from the Presidio to the docks at the foot of Folsom Street to the accompaniment of the cheers and sobs of 200,000 people.

* Troops had been transported by water to California and Mexico during the Mexican War.

With this beginning the Army Transport Service finally developed as a special service of the Quartermaster, yet as nearly independent as possible, with its own officers. Each principal port was to have a General Superintendent under the direct control of the Quartermaster General with assistants in each subport, thus providing a simple military chain of responsibility and command.

As San Francisco was the most important port in the country from the standpoint of troop transportation, the San Francisco Quartermaster Depot soon had a fleet of chartered ships operating from rented piers at the foot of Folsom Street. These included the *City of Peking, City of Sydney, City of Para, Morgan City, Ohio, Indiana, Pennsylvania, St. Paul, Scandia* (later the *Warren*), and others which made regular trips to the Philippine Islands during the war, carrying thousands of troops as well as supplies and equipment. At the end of a year of operation, in May 1899, the transports *Sherman, Sheridan,* and *Hancock* were added; in 1900 the *Thomas, Logan Meade,* and *Sumner* were included, and still later the *Buford, Crook, Kilpatrick,* and the freighter *Dix.*

With the passing of the emergency at the close of 1902 most of the chartered vessels were put out of service, but the building up of a permanent Army fleet continued. By the middle of 1905 a regular monthly service to Manila had been organized with the four largest and most seaworthy transports, the *Thomas, Logan, Sherman,* and *Sheridan.* These vessels left San Francisco on or about the fifth day of the month and returned about the middle of the second month thereafter. Occasionally extra trips were made by the *Crook* and the *Buford* to Manila, Alaska, and other areas.

These years immediately following the Spanish-American War had brought new responsibilities and problems to the San Francisco Depot Quartermaster. To supply territory acquired by the nation in the war, a large supply base on the Pacific Coast had to be created. The San Francisco Quartermaster Depot gradually increased its stock of supplies not only for Hawaii and the Philippines, but for Alaska whose garrison, though small, was far scattered with peculiar needs of its own. After the Boxer uprising in 1901, a regiment in North China was added to the list of troops to be supplied.

This then was the pattern of history which was to be disrupted by nature's upheaval in the early hours of April 18, 1906, when the heavy tremors of an earthquake shook San Francisco. Early that morning a mounted messenger arrived at Fort Mason with orders from Brigadier General Frederick Funston

which resulted in the dispatch of two companies of Engineers to aid in saving San Francisco from the ravages of the fire which followed the earthquake.

The Engineers brought out valuable records from the Headquarters of the Pacific Division and the Department of California, both located in the Phelan Building, and loaded them into a wagon to be hauled to Fort Mason for safekeeping. After eight o'clock that morning the tremors became so strong that General Funston ordered the men out of the building into the street. Then, with troops from the Presidio, Fort McDowell, and Fort Miley, they were detailed to guard the Mint and Sub-Treasury and to patrol the streets. Later, with explosives secured by tugboat from the California Powder Works at Pinole, some miles north of Oakland across the bay, the Engineer troops dynamited buildings in an effort to stop the rapidly spreading fires.

Meanwhile Fort Mason was made the headquarters of the Army, possibly because it was the nearest installation to downtown San Francisco. By evening of that historic day, the reservation was host to a crowd of homeless refugees for whom the post provided coffee, tents, cots, and blankets. Food stations were established to feed the destitute population with Army rations that were brought in as fast as the Southern Pacific Railroad could handle the shipments. All supplies had been lost during the day when fire consumed the Quartermaster Depot building with all its stock.

The depot first was moved to a site just across the streets from Fort Mason on Van Ness Avenue and North Point Street. Shortly after the fire the War Department decided to centralize all Quartermaster activities at Fort Mason itself, toward which site they had been progressing for half a century. Construction was the keynote as the Fort facilities were expanded to handle its new responsibilities. After a fill was made, the three concrete piers in use today were built on the west side of Fort Mason, and a number of warehouses and shops were erected on the reservation. The Army Transport Service began to operate from the piers in 1911, but it was 1915 before all Quartermaster activities were withdrawn from rented buildings in San Francisco and Fort Mason finally became the center of all supply activities on the Pacific Coast.

To provide access to the new Army piers by means of the State Belt Line Railroad operating on San Francisco's Embarcadero, the State Board of Harbor Commission in 1914 built a railroad tunnel over 1,500 feet long passing under Fort Mason from a portal near Aquatic Park on the east to a west portal emerging near the Army piers at Beach and Laguna streets. It was just beyond this tunnel that, during the 1915 Panama Pacific International

Exposition, Fort Mason and the Presidio temporarily relinquished a strip of land one block wide and four blocks long to provide space for the exposition's rail terminal and ferry slips.

Fort Mason's growth continued steadily until the momentous days of America's entrance into World War I in 1917. Paradoxically the national upsurge of military might did not at first strengthen Fort Mason. Since most of the Army activities then centered on the Atlantic Coast, the depot transferred many of its officers and trained civilian personnel to East Coast stations. When Army strategy later called for an expedition to Siberia from San Francisco, a hurried expansion became necessary. Many civilians were commissioned and trained on the job.

The depot at Fort Mason shipped a special organization of Army Engineers and a large amount of railway equipment to Vladivostok in 1919 via Army Transport Service, supplied the base during its year of activity, and returned the expedition from that bleak latitude in 1920.

The Army Transport Service at San Francisco received another assignment at the war's conclusion when the government undertook the repatriation of Czechoslovak soldiers to their homeland from Siberia. All of the regular transports left San Francisco for Vladivostok, picked up the repatriates, and continued on through the Suez Canal to Trieste, Italy, where the Czechs were debarked. The ships then touched at Genoa, Italy, and proceeded westward to New York, and then south through the Panama Canal to San Francisco.

The last portion of this itinerary was the forerunner of the regular services established in 1923 between the East and West coasts via the Panama Canal, augmenting the trans-Pacific run from San Francisco to Honolulu, Guam, and Manila. Regular sailings were arranged between New York, San Francisco, and Honolulu, the vessels returning to New York via the same route.

In 1925 the supply depot at Fort Mason became officially the San Francisco General Depot. The depot was charged with the supply of the Ninth Corps Area, Alaska, the Philippines, the Hawaiian and Panama Canal Departments, and the forces in China.

Then in 1932 all the functions of Fort Mason were brought under a new title, when Fort Mason was designated as the San Francisco Port of Embarkation and General Depot under the command of Brigadier General C. S. Lincoln.

Highlighting the period from 1932 to 1939 was the Port's function of

supplying the several hundred Civilian Conservation Corps camps on the Pacific Coast. This gave the Port Quartermaster his first large-scale transportation problems and entailed the building up of a larger civilian staff required to maintain a smooth operation.

This emphasis on the domestic scene was disturbed in 1939 by the rumbling of a new war machine in Europe, which was to increase to the roar of battle in September 1939, when the Nazi horde launched its scheme of world domination with a lightning thrust into Poland.

With a national emergency forecast by the strife in Europe, the federal government began to scrutinize its own military strength from a new international perspective. The San Francisco Port of Embarkation, strategically located for the quick supply of far-flung Pacific bases, was destined to assume greater importance in the nation's military structure.

We Load the Ships

A Transportation Corps captain stood on the deck of the *San Mateo Victory* at Pier 37 in San Francisco Harbor. Sailing time was an hour away and, as a pier officer of the Water Division at SFPE, the responsibility of finishing the ship's loading on schedule was his. Lashing gangs were tightening the last turnbuckles on the great boxes which contained trucks and tractors for the Philippines. A Naval Armed Guard detail in the aftergun position experimentally swung their five-inch cannon up and down in anticipation of enemy submarines. On the bridge the ship's master and the harbor pilot discussed conditions beyond the Golden Gate. Carpenters were fixing the catwalk, a narrow wooden bridge running fore and aft over the deck cargo.

On the decks of other ships lying at berth near by were cement mixers, tanks, crash boats, various types of invasion assault boats, cranes, and aircraft. And below, in the cavernous hold, infinitely more tonnage had been stowed, everything from jeeps to nail polish, blood plasma, and invasion money.

Carpenters and lashing crew clambored down the gangplank and the ship's Transportation Officer rushed aboard carrying the cargo manifests, stowage plans, and hatch lists. An Army tug nosed into the freighter's side. Lines were cast off. Slowly the ship backed out of the pier and faced her bow to the Golden Gate. Before she was out of sight, an empty ship riding high on the water moved into the berth she had just vacated. A pier officer and stevedore foreman from the Water Division were up the side of the new ship to plan a new loading job. Longshoremen swarmed aboard and began to fold back the tarpaulins before rigging the booms and opening the hatches. Winches rasped experimentally. On the pier below, lift trucks and tractor-trailers grunted into position.

And so the work of the Water Division had gone twenty-four hours a day during nearly four years of war. At the San Francisco Port of Embarkation

a total of 4,250 shiploadings had been completed, and the dispatched cargoes had landed successively on the piers of Brisbane, the beachheads of Guadalcanal and Okinawa, and the wharves of Yokohama.

Known until early 1943 as the Army Transport Service, the Water Division of SFPE was responsible for loading and unloading cargo on freighters and troopships, for repairing and maintaining these vessels, for procuring ship and pier personnel and providing berthing space through liaison with the Navy and War Shipping Administration, and for meeting the rigid sailing deadlines set by wartime exigencies.

Biggest of any SFPE unit, the Water Division made up 39 per cent of the total military and civilian personnel of the Port of Embarkation. One-fifth of all cargo shipped under Army control through United States ports during the war had been handled by the Water Division of SFPE. Water Division ships also transported the more than one and a half million troops leaving San Francisco for the Pacific fronts.

To keep moving across the broad Pacific a sizeable segment of the largest, most varied fleet of cargo ships the world had ever seen was a task drawing upon every resource at the disposal of the Water Division, from the muscles of the stevedore worker, through the ranks of pier and office personnel, up to the colonel's headquarters.

Especially in its early stage, World War II was often referred to as a battle of shipping. Such generalization, emphasizing a single factor, cannot detract from the fact that modern warfare makes insatiable demands upon every element of a nation's economy and presents difficult problems in all directions. It is true, however, that shipping stood at the forefront of difficulties encountered in preparing the United States for war. We entered the war with a serious shipping shortage. We had not made sufficient additions to our tonnage in peacetime, and the merchant fleets of our Allies had been riddled and all but decimated by more than two years of war.

An armored division, for instance, required at least fifteen Liberty ships in addition to the necessary troopships. The right supplies and the miscellaneous paraphernalia for each unit had to be assembled, down to the last box of pills for a medical unit and the last wrench to repair a tank for a tank unit. Loading was done according to plan with regard to the most efficient use of space and with regard to unloading on the other side. If the unit was expected to go into action immediately after landing and combat loading was necessary, fighting equipment and supplies had to be stowed so that they could be unloaded swiftly and in the order needed. All component parts

of highly specialized equipment had to be assembled and shipped together so that it was ready to function on arrival overseas.

The great distances to the Pacific battlefronts placed a tremendous burden and responsibility upon the Water Division from the earliest days of the war. In 1942 shipyards promised Liberty ships in three months. Radio Tokyo ridiculed the idea; no nation could build a cargo ship in ninety days. But the promises were kept. Henry J. Kaiser's Permanente Metals Company at Richmond, California, cut a few corners and produced one in 56 days and shortly afterward in 42 days. Then the Oregon Shipbuilding Corporation turned the industry upside down by delivering a Liberty ship in ten days.

The Permanente Company appraised the situation and resolved to find an even faster method. A summary of the constructive criticisms, ideas, and devices offered by the workers pointed to the answer—prefabrication.

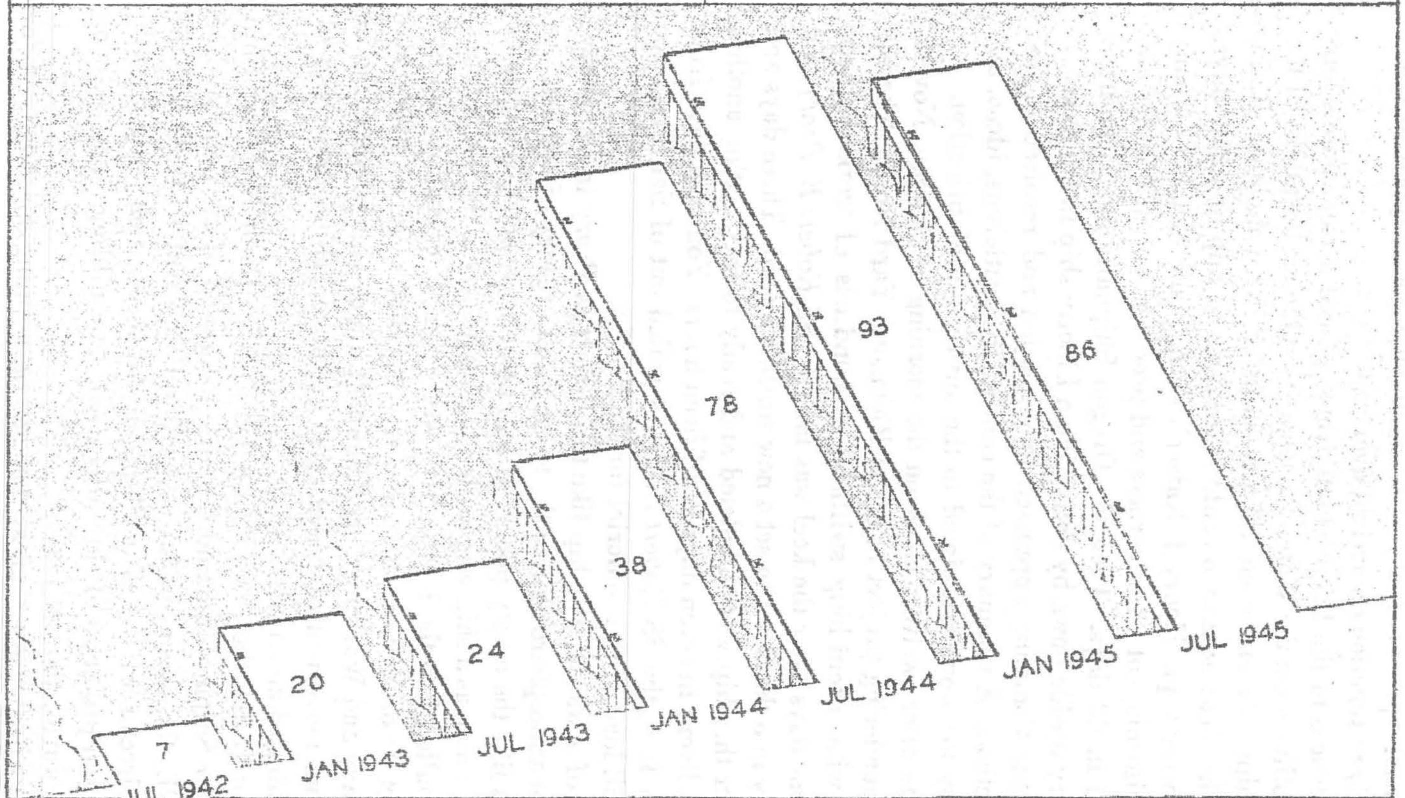
At one minute after twelve o'clock on the morning of Sunday, November 6, 1942, a thundering project began at Richmond Yard No. 2. The big ship took form with astonishing swiftness as hundreds of workers raced against time. Four days after the keel was laid the SS *Robert E. Peary* slid down the skidway into the water to set a new world's record. Three days and fifteen hours later the ship was completed and ready to sail, setting another record of final delivery in seven days and fifteen hours. Fourteen days from the laying of her keel, the SS *Robert E. Peary* sailed out of San Francisco Harbor with a full load of war materiel for the Pacific.

The loading of a war-bound ship like the *Robert E. Peary* in some ways carried with it an atmosphere akin to the tension and urgency of combat. An empty berth was like the empty pocket of an ammunition belt—it had to be filled quickly. As soon as a ship was loaded and on its way to the battle zones, an empty ship pulled into the berth. This was a simple operation, but one calling for exact co-ordination by the Water Division's Vessel Movement staff with the Navy and War Shipping Administration. This co-operation in the allocation and movement of vessels also extended behind the scenes of the routine berthing of an empty ship.

Working closely together, the Pacific Coast Joint Committees for Ship Operation and for Shipbuilding and Repair—composed of the Commanding General of SFPE, the Commandant of the Twelfth Naval District, and the Pacific Coast Director of the War Shipping Administration—successfully solved their mutual problems of ship allocation, shipbuilding, and repair on the Pacific coast during the war period.

Through most of the war a great shortage of shipping space existed for

NUMBER OF PACIFIC DESTINATIONS OF CARGO SHIPPED FROM SFPE



Cargo shipped from the San Francisco Port of Embarkation was unloaded at a great number of discharge points during the course of the war in the Pacific, in contrast to the relatively few ports which handled the bulk of supplies shipped to the European theater of operations from Atlantic coast ports. The existence of nearly 100 shipping destinations indicates the wide geographical dispersement of bases and troops in the Pacific theaters of operation. This rapid increase of discharge points specified by oversea requisitions during 1944 and early 1945 added appreciably to the complexity of problems involved in cargo planning and cargo loading at the Port.

The peak number of ports of discharge of oversea shipments from SFPE was passed in the middle of 1945, when certain South Pacific bases were closed out as their mission was completed. This presaged further consolidation of forces in the Pacific with the invasion and occupation of Japan.

both Army and Navy cargo, but in some cases both services had at a certain time less than a shipload of cargo for one destination. By consolidating Army and Navy cargo on one ship, the use of a second ship, or at least the necessity of multiple port discharge of several ships, was eliminated. Greater speed in cargo delivery, savings in cargo space and turn-around time were gained by this co-operation.

Likewise in ship repair the committee decided whether fighting or cargo ships should have priority in the repair yards as dictated by war needs.

As an empty ship was berthed by the pier on the Embarcadero or at the Oakland Army Base, the cargo loading list prepared by the Water Division was checked against cargo actually on hand at the piers to be loaded. Cargo Planning had prepared a plan showing where each item was to be loaded. In this plan ease of stowage and the trim and balance of the loaded ship were important factors. The port unloading facilities at the ship's destination also had been considered, since heavy lift cargo might have to be loaded in the hatches with heavy lift booms, if ship's gear was to be required for discharging the lift. Upon completion of loading, the stowage plan showing actual location of the cargo was flown to the overseas port ahead of the ship.

Once loading had begun, all available space aboard ship was used. Exceptions were in the case of combat-loaded ships, when guns and ammunition were loaded so as to be immediately at hand and in the exact order required upon arrival, and on some transports when space was left to be filled with troops picked up at overseas points. The public sometimes misinterpreted these exceptions as inefficient loading.

Deep tanks were stowed with small cases of canned goods or post exchange beer when not filled with water for ship's use. Above these, in the holds, a general cargo of crates, boxes, bags, or wheeled vehicles and guns was stowed. Serums, vaccines, and blood plasma in quantities too big for ordinary stowage were placed on deck in portable refrigerator boxes with foot-thick walls and built-in thermostats. Colored labels on cases indicated the degree of fire or explosion hazard; such cargo was specially stowed. Gold went into the ship's locker; watches, fountain pens, whiskey, and narcotics went into portable strong boxes completely blocked off by general cargo. Mail was usually stowed on top, in the square of the hatch.

Heavy lifts demanded extensive care. Some oversize items had to be cut up by blow-torches, to be reassembled overseas. Fifty-ton jumbo booms maneuvered tanks and trucks onto plank floors laid over cargo in the holds; winches pulled the machines into place and heavy chains secured them.

TYPES OF CARGO SHIPPED BY SFPE - WORLD WAR II

100 PERCENT EQUALS 23,589,472 MEASUREMENT TONS

The general composition of cargo shipped overseas from the San Francisco Port of Embarkation during 45 months of war is reflected by the percentage supplied by each branch of the Army Service Forces, by the Air Forces, and by miscellaneous agencies. Quartermaster, providing food, clothing, and maintenance supplies, furnished nearly one-third of all cargo leaving the Port. Rations comprised a large portion of Quartermaster shipments.

Ordnance, shipping primarily vehicles, tractors, tanks, and explosives, followed with 17.6 per cent of all cargo moved out from SFPE.

Air Forces planes and aviation maintenance parts comprised 16.7 per cent of the total Port cargo, slightly less than Ordnance.

Miscellaneous supplies, 15.2 per cent of total outbound cargo, included shipments of Special Services recreation equipment, Information and Education supplies, Post Exchange supplies, mail, Lend-Lease and Navy cargo, and dunnage.

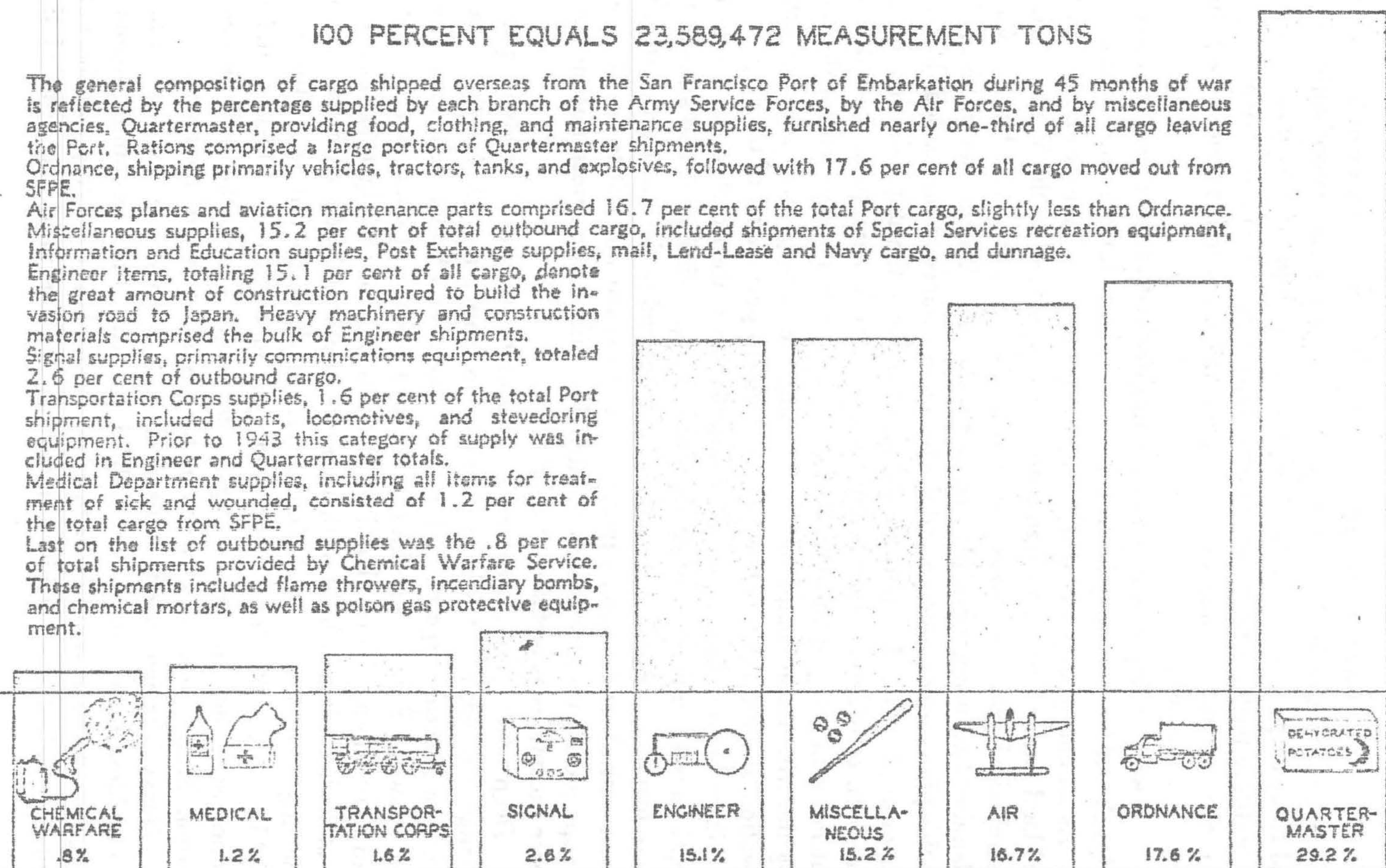
Engineer items, totaling 15.1 per cent of all cargo, denote the great amount of construction required to build the invasion road to Japan. Heavy machinery and construction materials comprised the bulk of Engineer shipments.

Signal supplies, primarily communications equipment, totaled 2.6 per cent of outbound cargo.

Transportation Corps supplies, 1.6 per cent of the total Port shipment, included boats, locomotives, and stevedoring equipment. Prior to 1943 this category of supply was included in Engineer and Quartermaster totals.

Medical Department supplies, including all items for treatment of sick and wounded, consisted of 1.2 per cent of the total cargo from SFPE.

Last on the list of outbound supplies was the .8 per cent of total shipments provided by Chemical Warfare Service. These shipments included flame throwers, incendiary bombs, and chemical mortars, as well as poison gas protective equipment.



Trucks, tanks, locomotives, engineering equipment, long wooden piling, and a variety of boats were loaded as deck cargo in the wells or on top of the hatches. Sometimes the boats were loaded on skids, to be launched at their destination by a skillful listing of the ship. The great weight of the locomotives carried on the deck wells in cribs of heavy timbers required structural reinforcement of the deck with many one-foot square timbers running downward to the keel of the ship.

When time was short or the lift particularly heavy, the Division's Tug and Barge Office furnished a barge derrick, or "BD." This was manned by a number of men, two of whom—the signalman and the barge operator—did the actual loading. This was a feat requiring exceptional ability since neither man was able to see the other, their only communication being a whistle or an electric buzzer. They performed at all hours of the day and night, often in choppy waters.

The lift truck operators and the longshoremen did yeoman work also. The lifts, compact little vehicles which picked up the load with two powerful blades and brought it alongside the ship, saved countless hours of labor.

In contrast to the newly-developed lift truck was the longshoreman's hook, used for decades to secure holds on cases being moved below decks. It had been outlawed when it ripped open too many flour bags and clothing bales, but it was quickly restored as the badge of the longshoreman to lift boxes or other cargo that it would not damage.

Wartime shiploading was not routine even for the experienced longshoreman who had to train hundreds of white collar workers in his business. The unusual and unexpected became commonplace. Two incidents which inspired more than their share of profanity were the Kiska movement and what was known as the "Navy cube project."

In early 1943, when the Kiska invasion was being planned, the problem was how to load the ships in such a way that cargo would be readily accessible, and in the order in which it would be used as soon as the troops debarked. The answer was to load most of the equipment on sleds. The odd sizes and shapes of these sleds and other equipment that was difficult to handle presented problems in stevedoring demanding the utmost ingenuity.

The "Navy cubes" were airtight steel compartments, five by five by seven feet. They were joined together for use overseas as piers or, with a propulsion unit, as barges. Theater commanders would not allocate deck space for them. Recalling that overseas such cubes had been carried lashed to the sides of LST's, the Water Division tried this method, but the first vessel to be

so equipped lost its cubes in the first storm met out of San Francisco. The next attempt was to construct floats or barges from the cubes and tow them to their destinations. These huge floats consisted of 288 cubes towed by sea-going tugs with a cable 1,500 feet long. This operation was later improved by loading the cubes into barges. The cubes made the barges practically unsinkable as they were towed overseas.

In the summer of 1944 two Navy ammunition ships blew up during loading operations at Port Chicago near the Benicia Arsenal. The disaster drew attention to one aspect of ship loading that required meticulous methods.

From December 7, 1941 to August 14, 1945 the Water Division loaded without a single mishap, 1,405,371 measurement tons of ammunition and explosives, about six per cent of the total cargo to pass through the Port and enough to fill 200 Liberty ships.

The problem of loading ammunition ships resolved itself into a matter of taking extra precautions. The loading was done away from the densely populated areas on San Francisco Bay at Benicia and Richmond Parr Terminal.

Before a boxcar of ammunition was allowed into a pier it was first inspected for broken car seals, possible sabotage devices, or any condition which would precipitate its detonation. In the ships' holds steel bulkheads were sheathed beforehand with wood, and boards were placed between bombs and shells so that metal would not strike metal. To diminish the hazard of fire, explosives were grouped and spotted in different hatches of the ship. Small amounts to be carried on regular freighters were put aboard in special lockers after the ship had moved out of the berth into bay anchorage.

In the Port Ordnance office a situation map indicated what commercial firms as well as government agencies handled ammunition. By checking the colored pins on this map the Port Ordnance officer knew at all times where in the Bay Area live ammunition was being handled.

When ammunition arrived at the pier the Safety Branch was notified by telephone. This office maintained a control board giving the location, type of ammunition, weight, and disaster radius of all concentrations of explosives at the Port. A colored disk representing the particular kind of explosive was hung in the appropriate square. It was possible to ascertain at a glance the exact phase of a loading operation and to anticipate the dangerous area. By consulting the map it could be determined immediately where to expect damage and which ships to move out of the piers in case of an explosion. The United States Corps of Engineers selected an emergency anchorage as the safest place in the Bay to which a vessel could proceed.

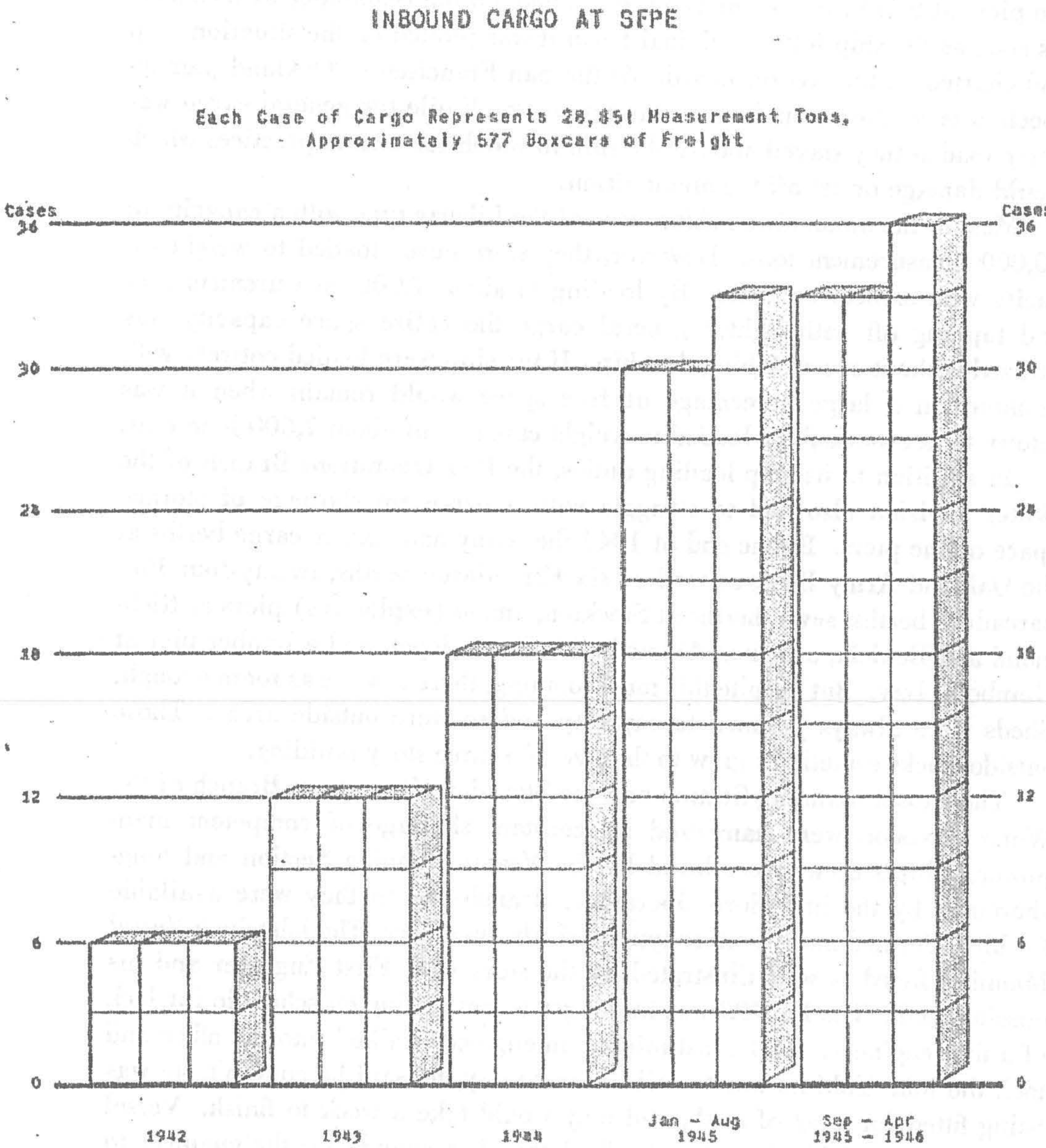
Upon completion of ammunition loading, the vessel was moved to one of the piers at San Francisco or Oakland to take on the remainder of its cargo. As soon as the ship left its original berth it was plotted on the situation map and charted on the control board. At the San Francisco or Oakland pier inspectors once more examined the ammunition. While the general cargo was being loaded they stayed aboard the ship to watch for unsafe practices which would damage or set off the ammunition.

Most of the ammunition ships were of the Liberty type with a capacity of 10,000 measurement tons. However, they were never loaded to weight capacity with explosives alone. By loading to about 7,000 measurement tons and topping off with lighter general cargo the entire space capacity was utilized without overweighing the ship. If the ship were loaded entirely with ammunition a large percentage of free space would remain when it was "down to her marks," or loaded to weight capacity of about 7,600 long tons.

In addition to its ship-loading duties, the Pier Operations Branch of the Water Division also had to struggle with a persistent shortage of storage space on the piers. By the end of 1944 the Army had sixteen cargo berths at the Oakland Army Base, as well as six Fort Mason berths, twenty-four Embarcadero berths, seven berths at Stockton, ammo (explosives) piers at Richmond and Benicia, a pier at Alameda Air Force depot, and a lumber pier at Humboldt Bay. But despite this mushrooming, there never was room enough. Sheds were always jammed to capacity and so were outside areas. Those outside stocks sometimes grew to the size of a three-story building.

The Vessel Manning Section and the Stevedore Operations Branch of the Water Division were hampered by constant shortage of competent manpower. Ship's crews were hired by the Vessel Manning Section and longshoremen by the Stevedore Operations Branch—when they were available for hire. Trained men of either type were always scarce. The job which Vessel Manning faced is well illustrated by the story of a First Engineer and his missing teeth. The LT *193* was in danger of not sailing on schedule for lack of a first engineer. At the last minute an engineer walked into the office and took the job. Told he was to sail the same day, he said he couldn't, he was being fitted for a set of teeth, and they would take a week to finish. Vessel Manning phoned his dentist and talked fast, fast enough for the engineer to make his ship, with his teeth and an hour to spare.

Stevedore workers on hand at the war's outset were mostly unskilled men from other industries. Victory gangs of white-collar workers did a four-hour shift to supplement regular gangs. They had to be trained on the job, be-



Although small by comparison with outbound cargo, the total inbound tonnage at SFPE through April 1946 measured close to 3,000,000 measurement tons. During the war returned cargo consisted primarily of items for repair and reconditioning. Cargo returned after the cessation of hostilities included every conceivable commodity in both serviceable and unserviceable condition.

cause there was no time to lose training them on dummy ships. Problems of race and sectionalism were involved, as well as fear of experienced longshoremen that they were building up postwar competition for themselves. However, these problems and fears were overcome through the common interest of all in getting the ships loaded and off to war as quickly as possible.

In the spring of 1945 contracts for loading Army ships were let out to commercial firms on a large scale for the first time, under the supervision of the Pier Operations Branch. These contracts augmented the American-Hawaiian Steamship Company contracts, instituted early in the war, at Embarcadero Piers 24, 26, and 28.

Another function of the Water Division was the work of the Marine Repair Shops. In their ship repair and conversion they ministered to old Hog Islanders of World War I, Liberties, Victories, transports, ocean-going tugs and barges, tankers, "reefer" refrigerator ships, "mechano" tankers equipped to carry airplanes as deck cargo on a false deck, and the converted Liberty ZEC's, with wide hatches and removable stanchions in the holds for accommodating airplane cargoes.

Of first importance was the job of converting freighters to transports, involving the installation of refrigeration equipment, a complete hospital, berth and mess facilities, and modern navigation aids.

Conversion of foreign ships was also undertaken in the shops. In this work the usual repair methods were complicated by foreign-designed equipment. A German transport, for instance, was brought in for repair. But the main engine and auxiliaries were badly worn and only the replacement of various parts would make them serviceable. Since it was impossible to send a requisition to the German army, the parts had to be fabricated. Skilled labor and well-tooled shops combined to turn out such items as four main-engine cylinder heads, eight complete fuel pumps, six large air chambers, and many fuel-injection valves.

All threads were of foreign standard and could not be duplicated by the cutting machines. Where threads were involved the shops had to make up an entire new unit. A set of drawings for engines and fuel pumps were aboard the ship but before any part could be cast or machined the blueprints had to be translated from German, the metric scale converted, and some of the charts redrawn.

The Marine Repair Shops expended labor and materials at a total cost of thirty million dollars to reconvert and repair the "bridge of ships" across the Pacific. Two and a half million dollars were sometimes spent on a single

reconversion job. Every deckload of cargo that left SFPE during the war was sprayed with a rust-preventive medium by Marine Repair Shop workers, who so perfected their job that they eventually could do a complete Liberty ship deck cargo in one and one-half hours. The drydock at Oakland Army Base became so efficient it handled hundreds of tons of shipping every week. The Fuel Oil Bunkering Plant of the Marine Repair Shop bunkered four ships with 35,000 gallons in sixteen hours, and handled ten million gallons up to the end of October 1945 without a "time-lost" accident.

Work at the Marine Repair Shops was supplemented by the fabrication and repair of many vital items behind the walls of California State and Federal prisons. Water Division activities were materially enhanced by turning over to prisons work orders which could not be expeditiously handled elsewhere at the time.

Prisoners of San Quentin repaired thousands of metal and wooden rigging blocks and hospital patients at San Quentin serviced the small plastic flashlights that went with every life jacket aboard ship.

Folsom prison handled many large orders requiring skilled blacksmithing. The prison shops made barrel hooks, triangle bridle heads, trapeze bars, water cans, and an assortment of equipment used in connection with the loading and unloading of ships.

Alcatraz, the famed federal prison on Alcatraz Island in San Francisco Bay, provided blacksmithing repair and fabrication work for the Marine Repair Shops. This work was augmented by the service provided by the prison laundry for soldiers of SFPE and for the many transports sailing from this Port.

Industrial plants of these prisons also manufactured such items as medical cabinets, litter and tourniquet handles for SFPE transport medical equipment, and other Marine Repair Shop equipment.

At the war's end the outgoing cargo procedure was reversed, and the discharge of returning materiel of war greatly increased the inland-bound freight from the Port. Much of the returned cargo during the last months of 1945 came back intact on ships loaded at San Francisco and other ports before the war's end. Some had been loaded in Atlantic coast ports for Europe, then diverted to the Pacific when the Nazi forces collapsed, and finally diverted back to the United States via San Francisco when Japan capitulated. Other ships loaded with supplies no longer needed in the Pacific theaters after hostilities had ended continued to arrive at SFPE in formidable numbers during 1946.

Specifications and Layout

Liberty Ships, Basic Design, Dry Cargo, EC2–S–C1 Type

The majority of the Liberty ships built were of the standard, or basic, design. The remaining vessels each conformed to one of the few types of complete re-designs, and these were given a different designation and type number; details of these are shown under the respective sections.

General details relating to design and construction are given in the foregoing text, but further pertinent details relating to the basic design of the dry cargo type are of importance.

The basic design was of a vessel of the full scantling type, with a raked stem, cruiser stern, a single screw and a balanced rudder. The second deck was continuous throughout and seven watertight bulkheads, all extending to the upper deck, divided the vessel into five cargo holds, fore and aft peak tanks and three deep tanks. The propelling machinery and boilers were located in a single midships compartment. The inner bottom tanks, six on either side, were fitted as fuel oil tanks but were also able to carry water ballast. Two forward deep tanks were situated under No 1 hold and the third was situated aft of the machinery space. The fuel oil settling tanks were located at the sides of the ship in the way of the boilers.

An illustration of the importance of the hull sub-division and the ability of Liberty ships to stand up to wartime conditions is the case of the *William Williams*, torpedoed in the Pacific and so severely damaged that it was estimated that no pre-war merchant ship could have taken similar punishment and survived the ordeal.

The torpedo struck the port side near No 5 bulkhead, shattered the plates and frames and blasted a hole on the starboard side of the ship. Bulkheads were destroyed, escape shafts blown away from holds and 'tween decks, the shaft tunnel smashed and the shaft pedestals blown away or damaged. In all, the damage aft was tremendous. The ship settled deeply by the stern, water lapped the deck forward of the after mast and the poop deck was completely submerged to the top of the gun deck atop the after house. Later, some 55 ft of after shell plating was found to be missing.

Steering was impossible and the vessel drifted for some days. Then, with tug assistance she was later able to proceed under her own steam of 42 'revs' to refuge at Fiji.

One of the most important attributes of this 'emergency' type of ship was its ability to carry a good deadweight of cargo. The deck space was as important as the under-deck areas and except for the midships house and the gun platforms there were no important obstructions for the whole of the Liberty's length. The unit deck load for the whole of the upper deck was 336 lbs per sq ft. For the second deck the loads ranged from 400 lbs per sq ft to nearly 700 lbs, and these applied from side to side of the vessel, including the hatches. Therefore it was to the latter positions that the smaller permitted loads applied. For the deep tank tops the load was 1,400 lbs per sq ft and for both the tank tops and the tunnel top recess it was 1,650 lbs per sq ft.

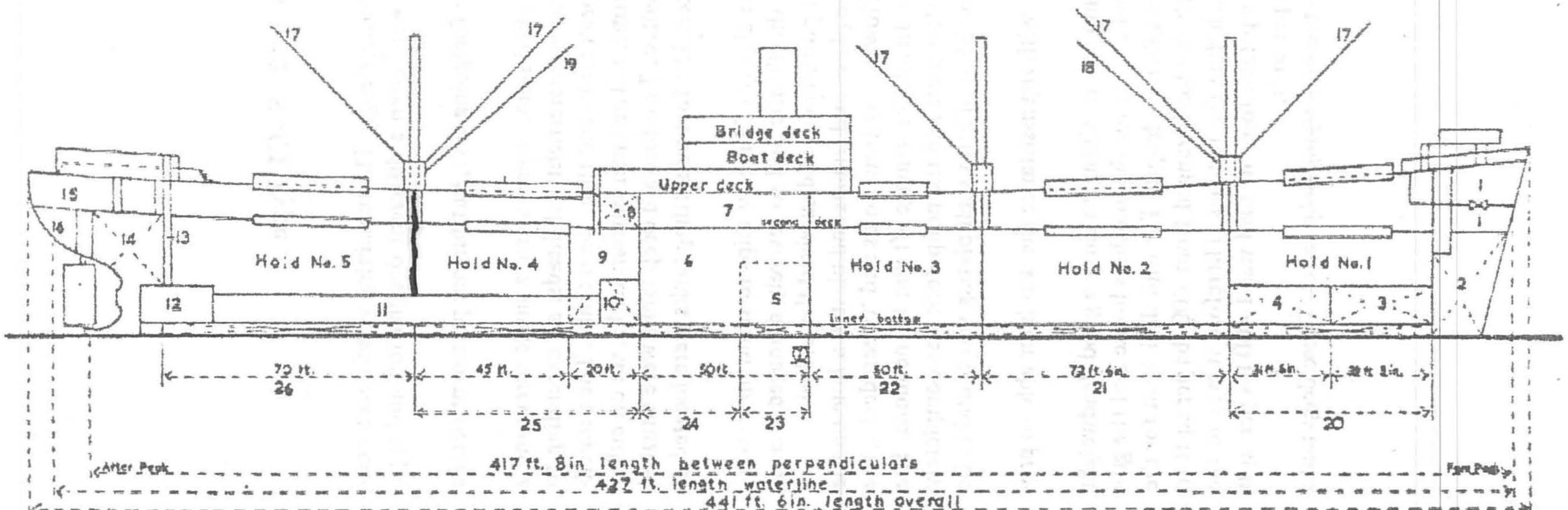
No 1 hold, with a length of 60¾ ft, had the least capacity due to the underlying deep tanks. These deep tanks

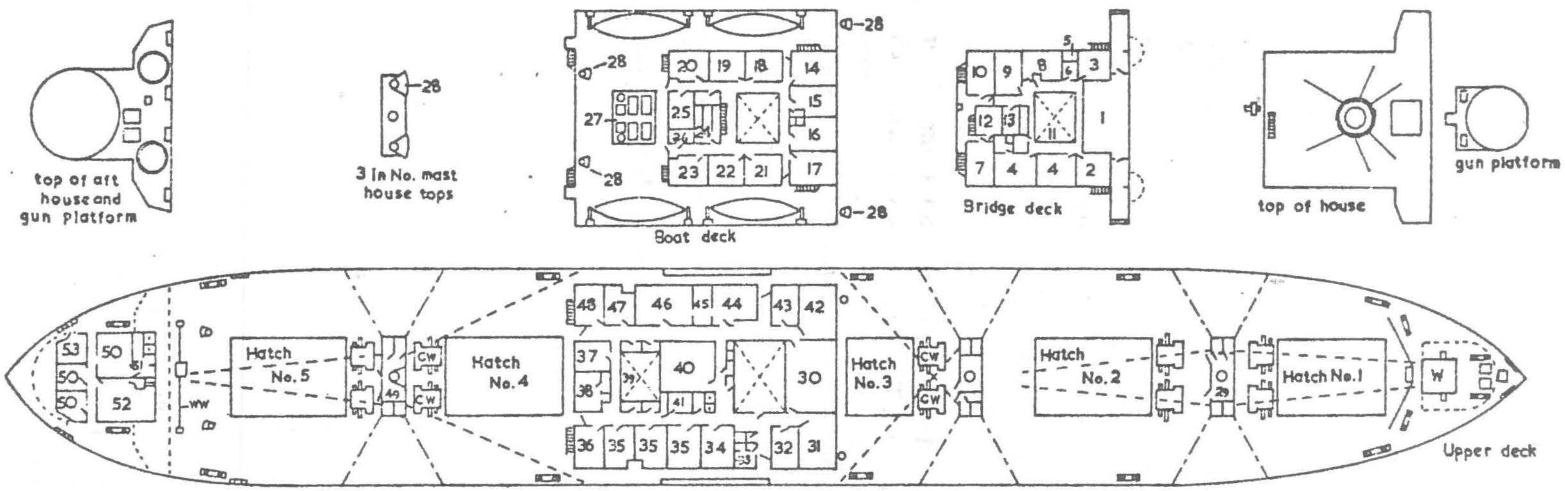
Key to Elevation

1 Stores
2 Fore peak
3 Deep tank No 1 (P & S)
4 Deep tank No 2 (P & S)
5 Fuel oil settling tank (P & S)
6 Machinery space
7 Refrigerated rooms & storerooms (P & S)
8 Fresh water tanks (P & S)
9 Deep tank No 3 (P & S)
10 Thrust recess
11 Shaft tunnel
12 Tunnel recess
13 Shaft tunnel escape trunk
14 After peak
15 Steering gear compartment
16 Void space
17 5-ton boom (P & S)
18 50 or 30-ton boom (CL)
19 30 or 15-ton boom (CL)

Double-bottom tanks:
20 Fuel oil or ballast tank No 1
21 Fuel oil or ballast tank No 2 (P & S)
22 Fuel oil or ballast tank No 3 (P & S)
23 Void space (P & S)
24 Reserve feed water tank No 4
25 Fuel oil or ballast tank No 5 (P & S)
26 Fuel oil or ballast tank No 6 (P & S)

P & S = Port & Starboard
CL = Centre line





Key to Deck Plans

Bridge deck:
1 Wheelhouse
2 Chartroom
3 Radio room
4 Captain
5 Battery room
6 Toilet
7 Captain's office
8 Cadets – deck dept
9 Radio operators
10 Spare
11 Boiler casing
12 Generator room
13 Stores

Boat deck:
14 Chief engineer's office
15 Chief engineer
16 1st assistant engineer
17 Chief mate
18 2nd assistant engineer
19 3rd assistant engineer
20 2nd mate
21 3rd mate
22 Chief steward
23 Cadets – engineering dept
24 Showers & toilets
25 Gunnery officer
26 Locker
27 Engine room skylight
28 Ventilators

Upper deck:
29 Lamp room & deck lockers
30 Officers mess
31 6 gunners
32 Cooks & messman
33 Showers & toilets
34 Oilers
35 Seamen
36 Bos'n & clerk/typist
37 Messmen
38 Ships office
39 Engine casing
40 Galley
41 PO's showers & toilets
42 6 gunners
43 Steward
44 PO's mess
45 Scullery
46 Crews mess
47 Deck engineer & oilers
48 Firemen
49 Paint room & deck lockers
50 2 gunners
51 Showers & toilets
52 Hospital
53 Medical stores

W = Windlass
CW = Cargo winch
WW = Warping winch

LIBERTY DRY CARGO SHIP, EC2 – S – C1 TYPE

were used either for dry cargo or for salt-water ballast, whilst the third one (20 ft in length) could be used for dry cargo, cargo oil, or fuel oil. No 2 hold -- the largest of all -- had a length of 72½ ft, and No 3 hold measured 50 ft. Nos 4 and 5 holds -- both with the shaft tunnel running through -- were of smaller capacity and were 45 ft and 70 ft in length, respectively.

All the cargo hatches had a clear width of 19 ft 10 in. In length Nos 2, 4 and 5 were 34 ft 10 in, No 1 was 33 ft 7 in, and No 3 was 19 ft 10 in. Hatchways were fitted with portable hatch beams and the covers were of wood. This type of material was used as a ceiling on inner bottoms in the way of the hatches, for the joiner bulkheads and for the ships' furniture.

Accommodation was provided in a three-deck-high midship superstructure and in a single deck-house aft. Beneath the superstructure at second (or 'tween) deck level and to port and starboard of the engine and boiler casing were situated the refrigerated vegetable, dairy, meat and fish rooms, clean and soiled linen rooms, dry storerooms and the engineers stores. The after deck-house accommodated some of the gunners, but also included the ships hospital, medical store-rooms, toilets and showers and the watertight-trunk ammunition hoist. All these crew spaces were steam heated, this contrasting with the later Liberty colliers, where, from necessity, a different method was adopted.

The basic Liberty ship was originally intended to have a crew of forty-five, but this figure was later increased to include gun crews to a maximum of thirty-six men, so making a total of eighty-one persons. Subsequently the division of this figure was amended; ships crew was increased to fifty-two persons and the gun crews reduced to twenty-nine.

The cargo gear was subject to some variation, but as designed each hold was served by 5-ton booms. Later additions were a 50 ton boom at No 2 hold and a 15 or 30 ton boom at No 4. There were three steel masts each with a mast-house to which the booms were stepped. The outfit of steam-driven cargo winches consisted of nine 7 in x 12 in double-geared winches for the 5, 15 and 30 ton booms, and one 10½ in x 12 in double-geared winch for the 50 ton boom.

Amidships, on the boat deck, were located four steel lifeboats each 24 ft long. One (later, two) were powered and each had a capacity of twenty-five persons; the remaining pair each had capacity for thirty-one persons.

When the designs of the type were being studied by the American Bureau of Shipping for classification purposes it was found that their own requirements for a basic vessel with a maximum draft of 26 ft 10 in were exceeded, and consequently they were able to certify the Liberty with a greater draft -- this permitting an additional deadweight of some 430 tons.

Details

Measurements:	Length overall	441 ft 6 in
	" between perpendiculars	417 ft $8\frac{3}{4}$ in
	" registered	422 ft 8 in
	" waterline	427 ft
	Breadth moulded	56 ft $10\frac{3}{4}$ in
	" extreme	57 ft
	Depth, moulded, to upper deck	37 ft 4 in
	" " " second "	28 ft 7 in
	Draft, original	26 ft 10 in
	" as classed	27 ft $8\frac{7}{8}$ in
	Freeboard	9 ft $8\frac{3}{4}$ in

Tonnages:	Registered	7,176 gross,	4,380 nett
	US measurement	7,191 "	4,309 "
	Panama "	7,223 "	5,093 "
	Suez "	7,230 "	5,399 "
	Deadweight, as planned	10,414	
	" as classed	10,865	
	Displacement	14,245	
	" light ship	3,380 (at 7 ft 9 in draft)	
	Lightweight	3,401	
	Defence equipment	130	

Capacities:	Cargo, cu ft:		
	No 1 hold & tween decks	84,181 (grain)	75,405 (bale)
	" 2 " " "	145,604 "	134,638 "
	" 3 " " "	96,429 "	83,697 "
	" 4 " " "	94,118 "	82,263 "
	" 5 " " "	93,190 "	82,435 "
	Deep tanks (combined)	49,086 "	41,135 "
	Totals	562,608	499,573
	General stores, cu ft	11,626	
	Refrigerated stores, cu ft	1,918	
	Water ballast, tons	2,811	
	Fixed " "	281	
	Fuel oil, "	1,819	
	Freshwater, "	188	

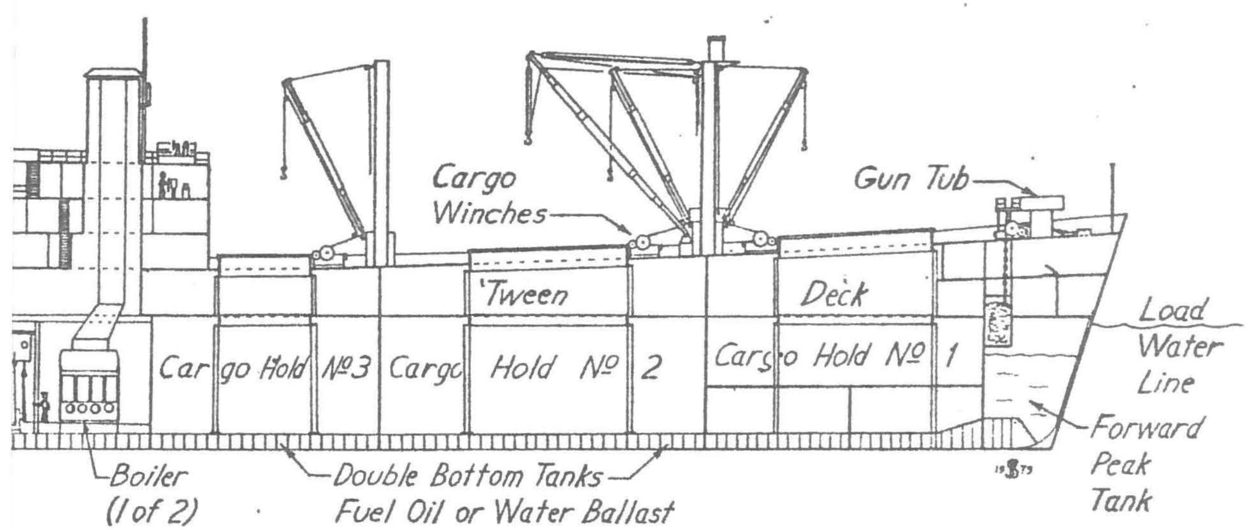
Main engine:	Direct acting, condensing, three cylinder, triple expansion,	
	indicated horsepower (at 76 rpm)	2,500
	Cylinders and stroke	24½, 37, 70 – 48 in
	Daily fuel consumption, tons	30
	Speed, knots	11
Boilers:	Two, of cross drum sectional sinuous header straight tube type, fitted with superheaters burning bunker 'C' oil,	
	pressure	220 psi
	temperature	450°F
	heating surface (two boilers)	10,234 sq ft

Auxiliaries:

Generators, three, type DC, 400 rpm; 167 amps, 120 volts, 25 Kw each.
Evaporator, one, vertical submerged type, capacity 25 tons per day.
Distiller, one, capacity 6,000 gallons per day.
Refrigeration system, one compressor,

temperatures, meat and fish rooms	15°F
vegetable room	40°F
dairy room	30°F

Masts:	Height above bottom of keel plate	82 ft $0\frac{1}{4}$ in
Telescopic masts:	" " " " " "	102 ft $0\frac{1}{4}$ in (not on foremast)
Booms:	5 ton (at fore and after masts), length,	55 ft
	5 ton (at No 3 hatch) "	47 ft
	15, 30 and 50 ton (on centreline) "	51 ft
Anchors:	Weight lbs, each	8,400, with $2\frac{1}{16}$th in chain diam
Propeller:	4 blade, diameter	18 ft 6 in
	mean pitch	16 ft
	surface	117 sq ft


Cargo Winches
Gun Tub
'Tween Deck
Cargo Hold No3
Cargo Hold No 2
Cargo Hold No 1
Load Water Line
Forward Peak Tank
Boiler (1 of 2)
Double Bottom Tanks Fuel Oil or Water Ballast

BUILT BY NEW ENGLAND SHIPBUILDING CORPORATION

The two yards of the New England Shipbuilding Corporation – the East and the West – commenced operations under different titles and until early 1942 were separated by rigid legal conditions.

The origins of the east yard date from 1941, for in that year two American concerns contracted to build 'Ocean' type ships for British account. One such concern was the Todd-Bath Iron Shipbuilding Corpn, whose new yard of the dry dock (or basin) type was situated on the edge of a residential community to the east of Cushing Point, South Portland, Maine. Here, launchings were not down slipways; instead the basins were flooded and the ships were floated out.

Whilst this yard was still under construction the management was instructed by the Maritime Commission to build another new yard next to it. Situated to the west of Cushing Point, it was to be operated by the South Portland Shipbuilding Corporation and became known as the West yard.

After Pearl Harbour the restrictive legalities of the separate yards were swept aside and both yards were operated as one enterprise by this corporation.

The Todd-Bath Corporation, when building the 'Ocean' ships carried out much of the steel fabrication at the new plant of the Bath Iron Works (the parent company of both these South Portland yards) and which, owing to the lack of local expansion facilities, was situated some 30 miles away from the shipyard. The East yard, therefore, was given no great fabricating or assembling areas.

The construction of the four-way West yard was more orthodox, the ships being launched from normal slipways. As a four-way yard it seemed ideal but the increase to six slips was really more of a contraction than expansion, for there was then no additional space and the extra slips just had to be fitted in with the others. However, all the materials for their construction had to be taken across the four original ways, and this greatly interfered with the shipbuilding activities.

Here also, the layout failed to include fabricating shops, the intention again being to have this work carried out by Bath Iron Works and thence carried by road from the nearest railhead, some three miles away. But production by this method was too slow and when the call came for an all-out effort these plans were of little use. In March 1942 the commission took an active part in providing the facilities to enable ships to be pre-assembled in large units instead of being put together piece by piece.

Soon the inhabitants of Cushing Point found the two shipyards encroaching into their community and condemnation of property became commonplace as expansion demanded fabricating shops, housing for the workers

and even a railroad. During the summer of 1942 eviction and demolition proceeded rapidly but long disputes and troubles over construction, supervision, facilities, fees and management all ensured that the deliveries of ships from the first contract were very much delayed. In fact, after the first Liberty keel was laid in September 1942 the East yard found itself building in some of its basins for British account and in the others for the Maritime Commission.

Collectively however, the delays were so great that the commission contemplated termination of the agreements by default, but their bitter experiences at Savannah (see Southeastern Shipbuilding Corpn) indicated the wiser course of a negotiated settlement. So, in early 1943 – at which time the yards had been without a clear authority for nearly a year – Todd Shipyards Corporation took over control from Bath Iron Works and installed new management 'on trial' for a period of sixty days.

During this time the two yards, now with the New England title, were expected to fabricate and erect 36,000 tons of steel and to deliver twelve vessels.

By March 1943 their performances were considered by the commission to be satisfactory, and soon after further expansion occurred with the acquisition from the USN of land to the north of the area.

These new shipbuilders, who failed to become one of the fastest yards and were in fact one of the two slowest, nevertheless considerably reduced their total number of manhours per ship. Over a two-year period commencing in May 1943 the figure dropped from 760,000 to 410,000, and after many early troubles the yard finally constructed an excellent number of vessels.

Liberty ship output (both yards) : 236 vessels at an average cost of 1,892,000 dollars each,
plus 8 for the transport of boxed aircraft.

Vessels built at the East Yard:

USMC hull numbers :

Built by South Portland Shipbuilding Corpn,	MCE 768–792	(Yard Nos 252–276, varied order).
	814–815	(" " 238–239)
	820–821	(" " 244–245)
	823–824	(" " 247–248)
	827	(" " 251)
Built by New England Shipbuilding Corpn,	MCE 793–800	(" " 277–284)

For the remaining constructions at this yard the MCE number was used as the yard number.

205 JOSIAH BARTLETT 10.42 CB 10.67: Scrapped Terminal Island.

206 WILLIAM KING 10.42 GMC 6.6.43: Sunk by submarine (U.198) torpedo off South Africa, 30.25S 34.15E.

207 JOHN CARVER 11.42 CB 23.4.45: Fuel tank exploded whilst vessel under repair at Philadelphia; sank. Refloated, towed Baltimore and laid up. 49: Scrapped Hoboken, NJ.

208 WILLIAM BRADFORD 12.42 HMC 6.60: Scrapped Philadelphia.

209 WILLIAM BREWSTER 12.42 HMC 63: Scrapped Kearny, NJ.

210 LOU GEHRIG 1.43 GMC 66: Scrapped Kearny, NJ.

211 DANIEL WEBSTER 1.43 GMC 10.1.44: Damaged by aircraft torpedo off Oran; towed in and beached. (Voyage Hampton Roads/Naples). CTL. Sold. Later salved and 9.48: Scrapped Carthagena.

212 WILLIAM PIERCE FRYE 2.43 HMC 29.3.43: Sunk by submarine (U.610) torpedo in N.Atlantic, 56.56N 24.15W,(voyage Halifax/UK).

213 HANNIBAL HAMLIN 3.43 GMC Reserve Fleet, site 5.

214 JOHN SULLIVAN 4.43 GMC 6.63: Scrapped Baltimore.

215 JOHN CHANDLER 4.43 HMC 47: ROCHEFORT.

216 JOHN HOLMES 4.43 DEW 47: NIDARHOLM. 50: TISTA. 53: SUHAE-HO. 58: SUHAE. 1.69: Scrapped Pusan.

217 JAMES G. BLAINE 9.42 CB 12.69: Scrapped Kearny, NJ.

218 HERMAN MELVILLE 10.42 CB 4.60: Scrapped Jersey City.

219 JULIA WARD HOWE 12.42 CB 27.1.43: Sunk by submarine (U.442) torpedo off Azores, 35.29N 29.10W (voyage USA/Gibraltar).

220 ANNE BRADSTREET 1.43 HMC 47: LA PALLICE. 5.69: Scrapped Hamburg.

221 JOHN TRUMBULL 3.43 GMC 47: ABBEVILLE. 60: FEDE. 61: Re-engined at Nantes to oil engine by At. & Ch. de Bretagne, renamed PAGAN.

222 RICHARD HOVEY 4.43 GMC 29.3.44: Sunk by Japanese submarine (I.26) torpedo and gunfire in Indian Ocean, 16.40N 64.30E.

223 EMILY DICKINSON 5.43 DEW 1.69: Sold for scrapping at Kearny, NJ.

224 EUGENE FIELD 5.43 WPM 60: Scrapped Baltimore.

225 THOMAS W. HYDE 5.43 GMC 10.64: Scrapped New Orleans.

226 GEORGE F. PATTEN 5.43 GMC 3.70: Sold to Seoul, Korea shipbreakers.

227 WILLIAM PEPPERELL 6.43 HMC 12.69: Scrapped Portland, Ore.

228 THOMAS B. REED 6.43 GMC 66: Scrapped Kearny, NJ.

229 JOSHUA L. CHAMBERLAIN 6.43 GMC 11.66: Scrapped New Orleans.

230 JEREMIAH O'BRIEN 6.43 GMC Reserve Fleet, site 6. ******************************

231 JOHN A. POOR 6.43 HMC 19.3.44: Sunk by submarine (U.510) torpedo in Indian Ocean, 13.58N 70.30E. (Voyage Karachi/USA – Ilmenite sand).

232 HARRY A. GARFIELD 7.43 HMC 45: BELGIAN DYNASTY. 47: CAPITAINE FRANKIGNOUL. 59: HONESTAS. 64: MASTER ELIAS. 11.3.65: Aground on Burias Island, Philippines, 12.49N 123.17E. (Voyage Japan/Manila). 15.3.65: Refloated, damaged; towed Manila. Sold. 8.65: Scrapped Hirao.

233 ARTHUR L. PERRY 7.43 GMC 57: Scrapped Seattle.

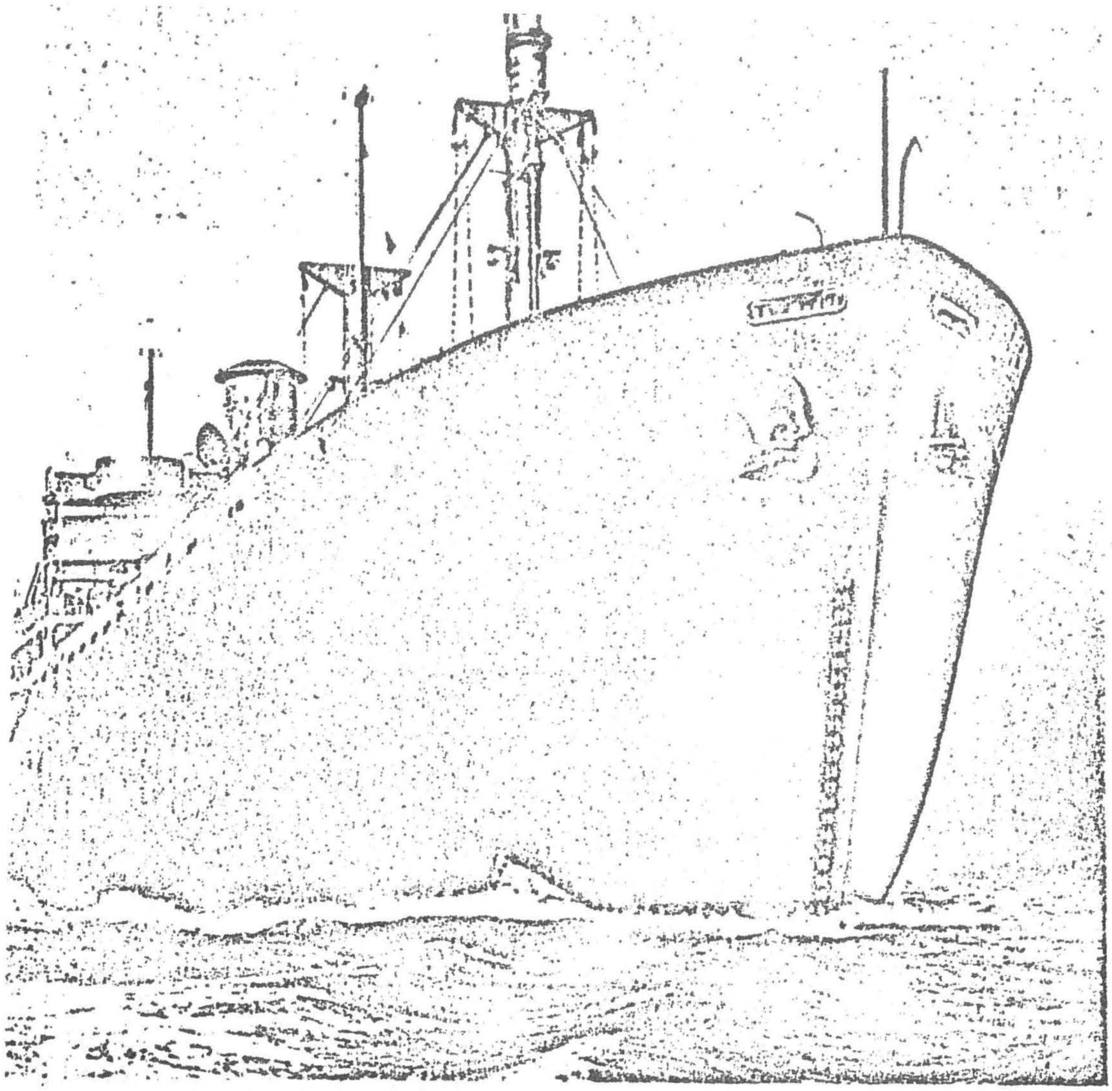
234 NELSON DINGLEY 7.43 VIW 47: ITALTERRA. 53: Re-engined at Taranto to oil engine by Fiat. 66: BAYPORT.

235 JAMES BOWDOIN 8.43 WPM Reserve Fleet, site 2.

236 HENRY JOCELYN 8.43 GMC Reserve Fleet, site 2.

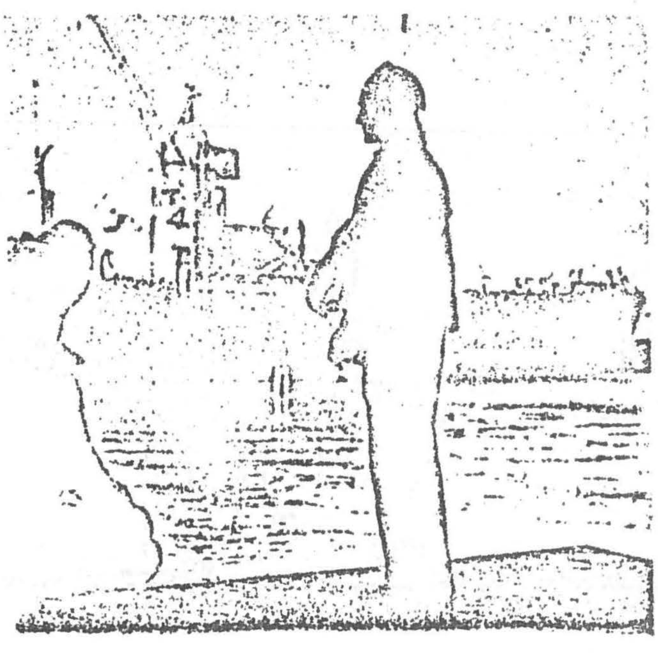
237 BARTHOLOMEW GOSNOLD 9.43 HMC 47: SEABREEZE. 59: SKJELNES. 61: JOHN G.L.

Equipment



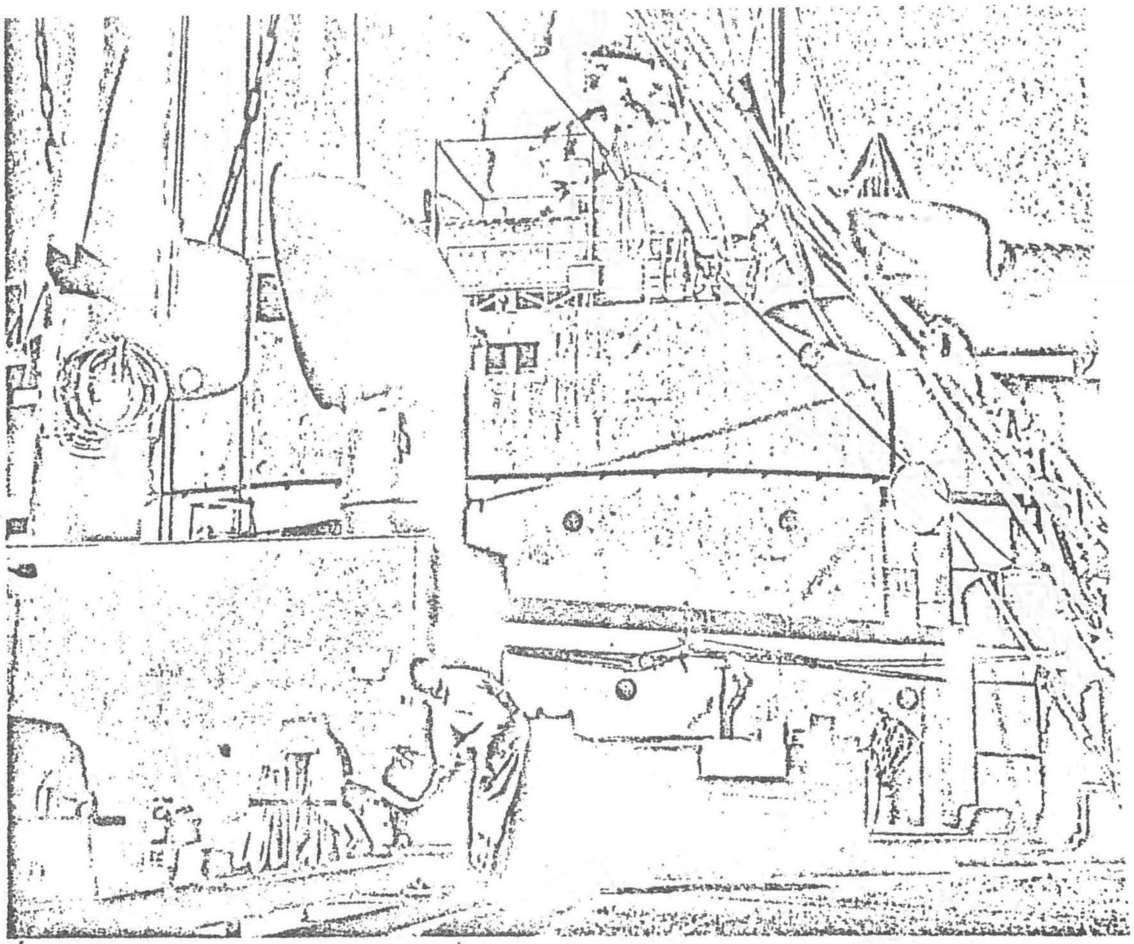
THE LIBERTY SHIP LEAVES THE SHIPYARD TO BEGIN HER CAREER OF WAR SERVICE

THE LIBERTY SHIP



The twenty-two Liberty ships delivered to the Maritime Commission up to March 15 form the vanguard of a huge emergency fleet of standard design cargo vessels which the United States is building to speed the victory of the Allied Nations. Of the 1478 Liberty ships contracted for up to that time, 142 keels have been laid and 61 vessels have been launched. In months to come a virtual avalanche of Liberty ships will slide down American shipways as an eloquent answer to the pillage and butchery of the lawless nations who are attempting to abolish freedom and liberty from the face of the earth.

To build this huge fleet at topmost speed, without interfering with the Government's long-range and naval shipbuilding programs, the Maritime Commission has built 18 new shipyards, having 171 shipways. None of these yards existed before 1941. Most of them have been built and are being operated by existing shipbuilding companies. Production schedules have been shortened to about three and a half months from keel laying to delivery. Since originally contemplated, the Liberty ship program has been expanded sevenfold. Whereas original schedules provided for the production of two

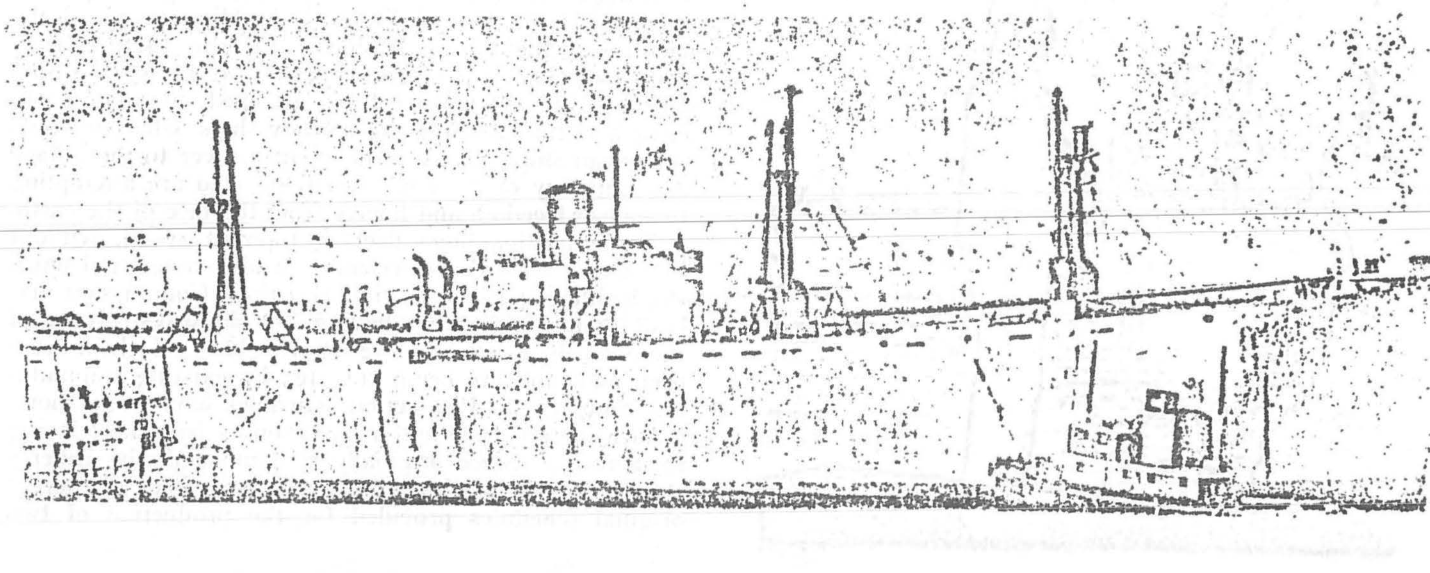


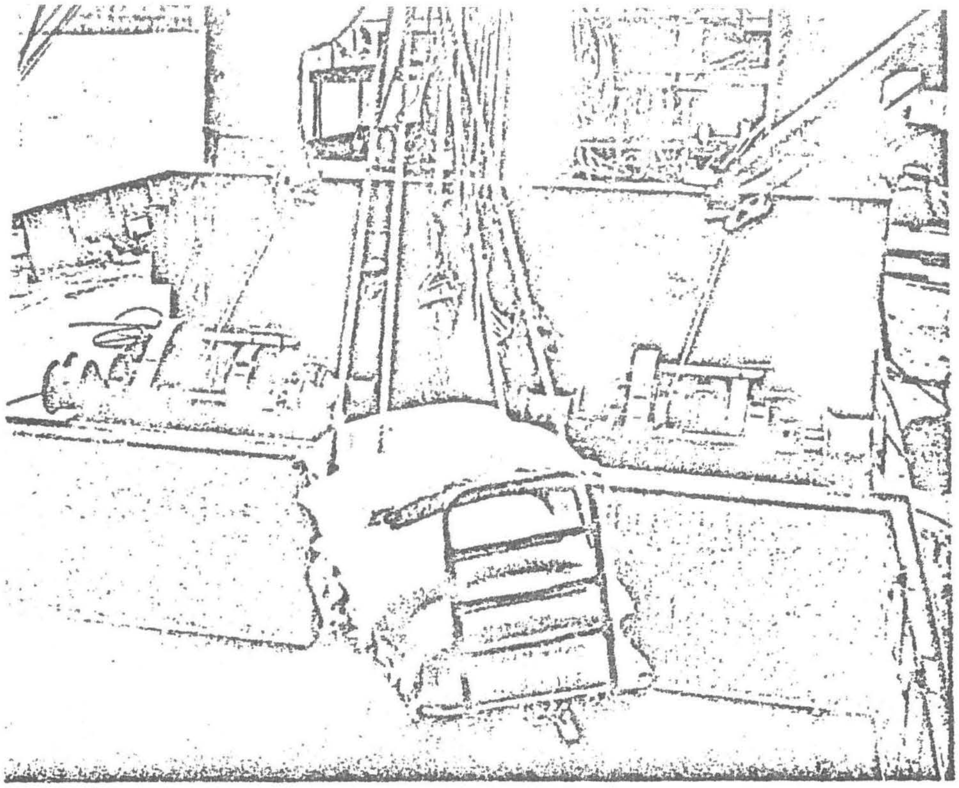
SHIPSHAPE AND READY FOR SEA. (BELOW) THE LIBERTY TYPE IS A WELL-BUILT CARGO SHIP DESIGNED TO BE CONSTRUCTED QUICKLY AND TO DO AN EFFICIENT WAR JOB

Liberty ships per year on each way, the application of modern assembly line and mass production methods to shipbuilding has increased the schedule output per shipway to an average of five to six Liberty ships per year. All of the vessels in the Liberty ship program are scheduled to be delivered into the war service of the Allied Nations by the end of 1943.

The Liberty ship was designed from the viewpoint of minimum cost, rapidity of construction and simplicity of operation. Confronted at the outset with the problem of obtaining engines for this vast new fleet without interrupting the progress of the Government's long-range shipbuilding program, the Maritime Commission solved the production problem by resorting to a less advanced type of propelling machinery for the Liberty ships. Adoption of the older type of triple-expansion reciprocating steam engines, it was found, would tap unused manufacturing facilities within the country without creating a production bottleneck. By closely following the British design of a similar emergency cargo ship, our Liberty ships were made readily adaptable to operation by British crews and to emergency repairs in virtually any port of the world.

Though slower than the vessels now being built under





CARGO HANDLING GEAR, WHILE SERVED BY STEAM WINCHES IS ENTIRELY ADEQUATE TO DO A SPEEDY JOB OF LOADING AND UNLOADING CARGOES OF WAR GEAR

the Commission's long-range program, the Liberty ships are in every respect efficient cargo carriers. The vessels are being built under special survey of the American Bureau of Shipping to the highest class ✠ A-1 (E) "with freeboard" ✠ AMS ✠ RMC.

The rapidity with which the Liberty ships are being built in no sense implies a sacrifice in efficiency or seaworthiness. The cargo gear is designed for simplicity of operation to meet the handling difficulties likely to be encountered in foreign ports. Steam-driven winches are used throughout. The emergency equipment is complete to the last detail, in keeping with the latest refinements adopted by the British Ministry for wartime operation.

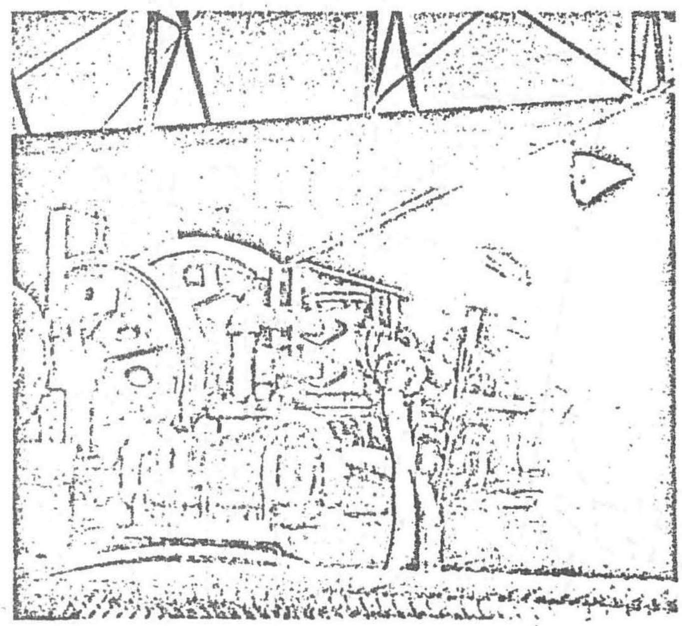
The Liberty ship's normal complement of 44 officers and crew are well provided for. Their quarters, though somewhat smaller than those being built into the Government's long-range program ships, are modern, clean and comfortable. The officers' and crew's quarters are all in one house, thus eliminating the need for passing over weather decks for messes, etc. They boast the most modern sanitation facilities, with a maximum of four men in a room, and superior quality mattresses and berths.

Construction methods employed on the Liberty ships conform to modern American shipbuilding practice, with extensive use of welding to save time and steel, and the modification of fabrication methods to permit greater utilization of unit assembly work. The materials and equipment for all of these ships are being obtained through centralized purchase, thus reducing delay in procurement to a minimum.

Hull Construction

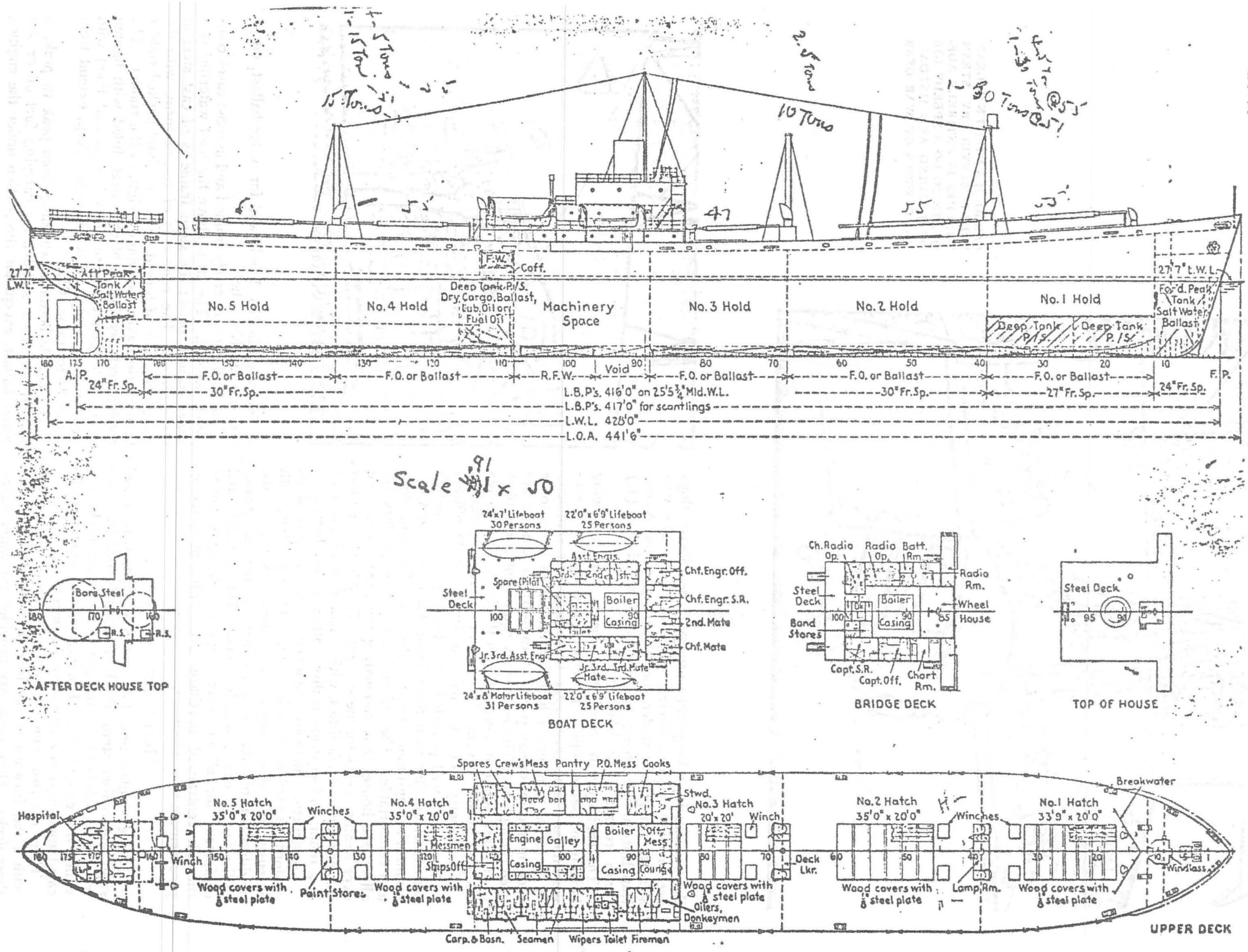
Of the single-screw, full scantling type, with raked stem and cruiser stern, the hull is subdivided by seven transverse bulkheads, watertight to the upper deck, providing five cargo holds. The engines and boilers are located amidships in a single compartment.

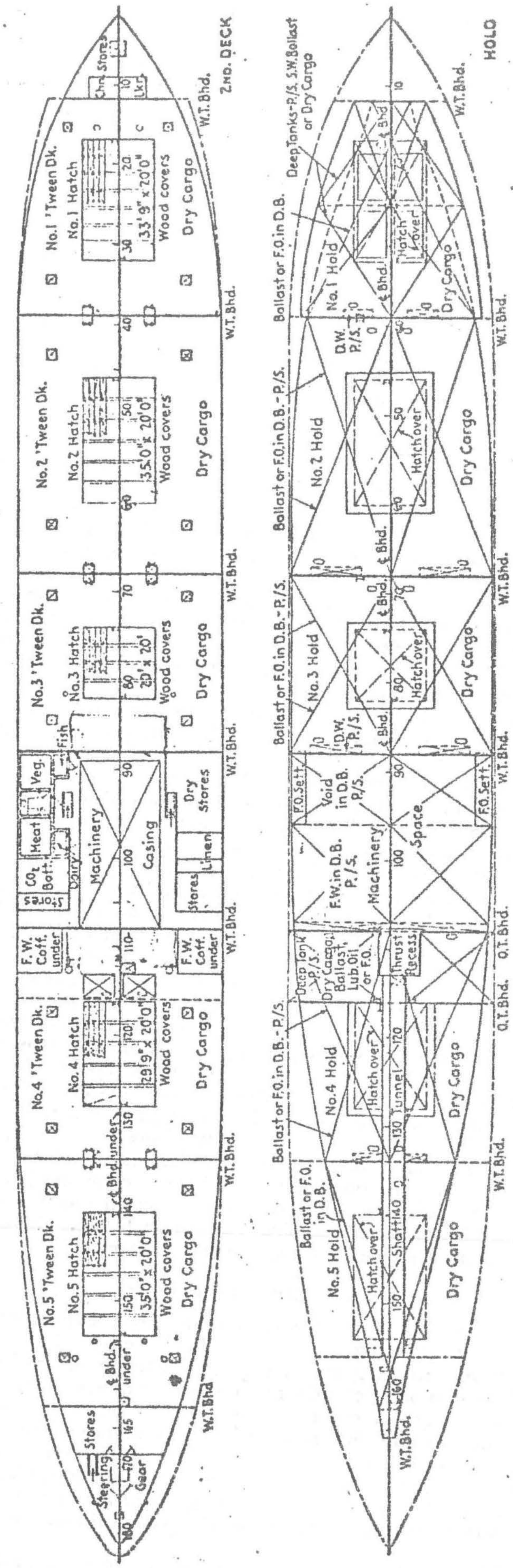
There are two complete decks, the upper and second, with a flat forward of the fore peak bulkhead between these decks. Deep tanks are provided for water ballast or dry cargo in No. 1 hold and for water ballast, oil or dry cargo in No. 4 hold.



The hull is transversely framed and in most cases completely welded. The stem above the load waterline is a heavy formed plate; the stern frame is of cast steel in three pieces. The rudder is of contra form, with the rudder top post of forged steel. A gland packed rudder head carrier takes the whole weight of the rudder. The rudder neck bearing is of cast steel, lined with lignum vitae. The gudgeons are brass bushed and lined with lignum vitae. Bilge keels, 10 inches deep, extend from frame 54 to frame 105.

The double bottom, extending from peak to peak, is welded and made suitable for carrying fuel oil or salt water ballast, except for the portion under the engines,


15 Tons
1-15 Tons
2.5 Tons
10 Tons
1-30 Tons @ 5'
27'7" L.W.L.
Aft Peak Tank Salt Water Ballast
No. 5 Hold
No. 4 Hold
F.W.
Coff.
Deep Tank P/S. Dry Cargo, Ballast, Lub. Oil or Fuel Oil
Machinery Space
No. 3 Hold
No. 2 Hold
No. 1 Hold
Deep Tank P/S
Deep Tank P/S
27'7" L.W.L.
For'd. Peak Tank Salt Water Ballast
A.P.
F.P.
24" Fr. Sp.
30" Fr. Sp.
F.O. or Ballast
R.F.W.
Void
27" Fr. Sp.
L.B.P.'s 416'0" on 25'5 3/4 Mld. W.L.
L.B.P.'s 417'0" for scantlings
L.W.L. 428'0"
L.O.A. 441'6"
Scale .91 x 50
Bare Steel
R.S.
AFTER DECK HOUSE TOP
24'x7' Lifeboat 30 Persons
22'0"x6'9" Lifeboat 25 Persons
Asst. Engrs.
Steel Deck
Spare (Pilot)
Boiler Casing
Chf. Engr. Off.
Chf. Engr. S.R.
2nd. Mate
Chf. Mate
Jr. 3rd. Asst. Engr.
Jr. 3rd. Mate
3rd. Mate
24'x8' Motor Lifeboat 31 Persons
22'0"x6'9" Lifeboat 25 Persons
BOAT DECK
Ch. Radio Op.
Radio Op.
Batt. Rm.
Radio Rm.
Steel Deck
Band Stores
Boiler Casing
Wheel House
Capt. S.R.
Capt. Off.
Chart Rm.
BRIDGE DECK
Steel Deck
TOP OF HOUSE
Spares
Crew's Mess
Pantry
P.O. Mess
Cooks
Stwd.
Hospital
No. 5 Hatch 35'0" x 20'0"
Winches
No. 4 Hatch 35'0" x 20'0"
Messmen
Ships Off.
Engine Casing
Galley
Boiler Casing
Off. Mess
Lounge
No. 3 Hatch 20' x 20'
Winch
Deck Lkr.
No. 2 Hatch 35'0" x 20'0"
Winches
No. 1 Hatch 33'9" x 20'0"
Breakwater
Windlass
Winch
Wood covers with 1/8 steel plate
Paint Stores
Wood covers with 1/8 steel plate
Wood covers with 1/8 steel plate
Oilers, Donkeymen
Wood covers with 1/8 steel plate
Lamp Rm.
Wood covers with 1/8 steel plate
Carp. & Bosn.
Seamen
Wipers
Toilet
Firemen
UPPER DECK



INBOARD PROFILE AND DECK PLANS OF THE LIBERTY TYPE CARGO SHIP

Particulars of the Liberty Ship

Length overall	441 feet 6 inches
Length at load waterline	428 feet
Length between perpendiculars (for scantlings)	417 feet
Length between perpendiculars (on 25-foot 3¼-inch molded waterline)	416 feet
Beam, extreme	57 feet
Beam, molded	56 feet 10¾ inches
Depth, molded to upper deck	37 feet 4 inches
Depth, molded to second deck	28 feet 7 inches
Height of 'tween decks, molded	8 feet 9 inches
Sheer at forward end on upper deck	8 feet 9 inches
Sheer at after end on both decks	4 feet 6 inches
Deck heights, midship house, molded	7 feet 6 inches
Draft, loaded	27 feet 8 inches
Gross tonnage, estimated	7185 tons
Displacement	14,100 tons ?
Number of holds	5
Number of decks	2
Propulsion	single screw, steam reciprocating
Boilers	2 watertube, oil-fired
Normal complement	44

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which is designed for carrying reserve feed water, and that under the boilers which is a dry tank.

All main bulkheads below the upper deck are watertight except those bounding oil tanks which are oiltight. Steel centerline bulkheads are arranged in the holds clear of hatches. The centerline bulkhead in the after deep tank is oiltight and that in the forward deep tank is watertight. Details of the framing, shell plating and decks are shown on the midship section.

The deck houses are of steel, of watertight construction. All bulkheads dividing staterooms, passages, offices, etc., are of plywood 1⅛ inches thick.

All hatches, except in way of deep tanks on the second deck and in No. 1 hold are fitted with wooden covers. On the upper deck they are covered with tarpaulins. Douglas fir ceilings are laid on the tank top and deck under the main cargo hatches Nos. 2, 3 and 4, extending 1 foot beyond the hatch line, beyond which a steel covered brow is fitted all around.

The deck areas exposed to the weather are covered with paint. In the accommodations the passages, staterooms, offices, messrooms and hospital are covered with magnesite, the toilets and showers with ceramic tile or cement, the galley and pantry with commissary tile and the various storerooms with paint.

Cargo Handling. The vessel has three cargo masts, located at frames 39, 68 and 134. The mast at frame 68 is designed for a safe working load of 10 tons with shrouds but without preventer stays. The mast at frame 39 is designed for a safe working load of 30 tons with shrouds and three preventer stays. The mast at frame 134 is designed for a safe working load of 15 tons with shrouds and a centerline preventer stay.

Because of the impairment of docking facilities in Europe and the need for speed in the discharge of cargo by foreign crews or stevedores who will be operating the

equipment on these vessels, British practice has been followed in the arrangement and details of all cargo-handling gear. Five cargo booms are installed on the mast at frame 39; four of them are 5-ton booms and one is a 30-ton boom. Two 5-ton booms are installed on the mast at frame 68, and four 5-ton booms and one 15-ton boom are installed on the mast at frame 134.

All boom and mast fittings are for 5-ton booms and are designed for a safe working load of 10 tons to permit the installation of 10-ton booms and rigging, if desired. All cargo-handling gear for 5-ton booms is designed for a boom angle of 25 degrees with the horizontal, and for 15-ton and 30-ton booms for a boom angle of 35 degrees.

There are ten steam-driven cargo winches, five right-hand and five left-hand, installed as indicated on the general arrangement plans. Each winch consists of a wire-rope drum and a gypsy head driven through spur gearing by 8 by 8-inch cylinders. The drum is 16 inches diameter and 20 inches long, and the gypsy head 14 inches diameter and 14 inches long. The gypsy head is mounted on the drum shaft. The winches are fitted with foot brakes.

Deck Machinery. In addition to the cargo winches the deck machinery includes a windlass, warping winch and steering gear.

The windlass is a 10-inch by 12-inch steam-driven unit with quick-acting warping heads, capable of hoisting two anchors simultaneously from a 30-fathom depth of water at a chain speed of 30 feet per minute. The windlass is capable of hoisting each anchor and the maximum scope of chain under all service operating conditions. There are two wildcats on the main horizontal shaft and two warping heads on the intermediate shaft ends, all driven by spur gearing. Each wildcat is fitted with a hand-operated brake of sufficient capacity to stop and hold the anchor and chain when let go under control of the brake.

The warping winch, installed aft, is of the horizontal reversible steam spur-gear type, capable of handling a load of at least 2500 pounds at a speed of 75 feet per minute for taking slack lines. The maximum pull at the gypsy heads is from 23,000 to 26,000 pounds. The gypsy heads are 18 by 18 inches.

The steering gear is of the 2-cylinder type with an 8-inch by 8-inch steam engine controlled by telemotor from the wheel house and an extension from the steering wheel to the flying bridge. The engine is operated condensing. The steering gear is capable of moving the rudder from hard-over to hard-over (70 degrees) in 30 seconds when the vessel is going ahead full speed at full load draft. For emergency operations, tackle is arranged for connecting the quadrant to the after winch. A trick wheel is fitted to the engine for emergency local control, and is connected by shafting to the wheel at the aft steering station. A mechanical rudder-angle indicator is installed in the steering gear room.

Ground Tackle. Hawse pipes, of cast steel, are provided for two stockless bower anchors and welded chain pipes lead from the windlass bedplate to the chain locker.

The anchor chains are of cast or forged steel in 15-fathom lots. The stream line and towlines are of 6/24 plow steel wire rope. The hawsers and warps are of manila.

Ventilation and Heating. Natural ventilation is carried to the holds, machinery spaces, shaft tunnel and accommodations through cowl or mushroom head ventilators, coamings and trunks. A 6-inch ventilator is fitted to each storeroom, a 9-inch ventilator to the galley and a 10-inch ventilator to the steering gear room. The main machinery space has four ventilators, each 30 inches in diameter, carried well above the weather deck and fitted with movable cowl heads arranged for operation from below.

The ventilation air is not heated, the quarters being heated by steam radiators supplied with steam at 15 pounds gage pressure at the reducing valves.

Fire Protection. The fire main system is equipped with hydrants or hose outlets so arranged that any point on the ship can be reached by a single 50-foot length of hose. Steam smothering is provided for all cargo holds, paint and lamp room lockers, etc. As required for all oil-fired vessels, the machinery spaces are protected by an adequate CO_2 smothering system. Portable fire extinguishers are distributed throughout the vessel as required.

No fire detection system is provided, but a system of 8-inch alarm gongs, operated from the wheel house, is installed. Electrical current for this system is obtained from the 20-volt interior communication circuit.

Navigating Equipment. Standard magnetic compasses and binnacles are installed in the wheel house, on the wheel house top and at the after steering station. The navigational equipment also includes a 12-inch searchlight, a sounding machine, mechanical engine-room telegraphs, fog horn, voice tubes, clocks, bells and gongs.

Lifesaving Equipment. Each vessel is equipped with four steel lifeboats, stowed under davits on the boat deck, two on each side. Each lifeboat is of 31-person capacity and one of the boats on each vessel is equipped with a motor for propulsion. All the boats are completely equipped with sails, gear, first-aid equipment, water and provisions.

Additional buoyant apparatus is provided, sufficient to accommodate all on board, as well as life preservers and life buoys.

Accommodations. Accommodations for the full complement of 44 officers and crew are provided in the deck house amidships. The captain's stateroom and office is on the bridge deck, starboard side, with the radio operators on the port side. The quarters for the deck officers and engineers are on the boat deck, and for the crew on the upper deck. The officers' mess and lounge is at the forward end of the deck house on the upper deck, while the petty officers' and crew's messrooms are on the port side. The galley is amidships between the boiler and engine casings. The hospital is aft on the upper deck.

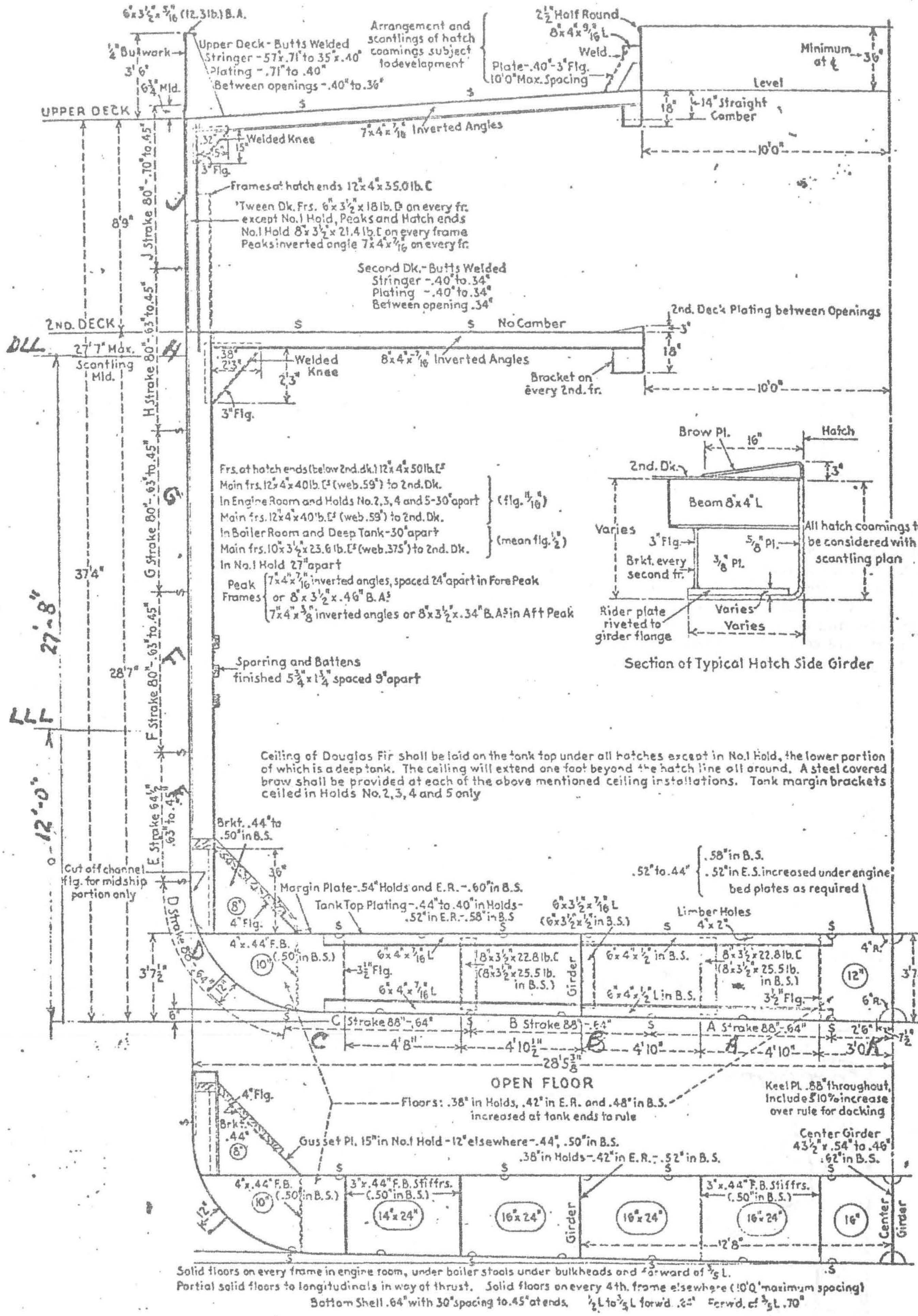
The quarters for both the officers and crew are comfortably and conveniently arranged. Built-in berths are provided in the officers' staterooms and pipe berths in the hospital and crew's quarters. The floors are covered with Selbalith, the bulkheads are of gray tint and the doors light gray. The officers' furniture is upholstered in brown leather and the crew's in dark tan Pantasote.

The galley is equipped with a 2-oven center-fired coal-burning range, a 25-gallon steam-jacketed stock kettle and other necessary appliances. In each mess there is an electric hot plate and an electric toaster.

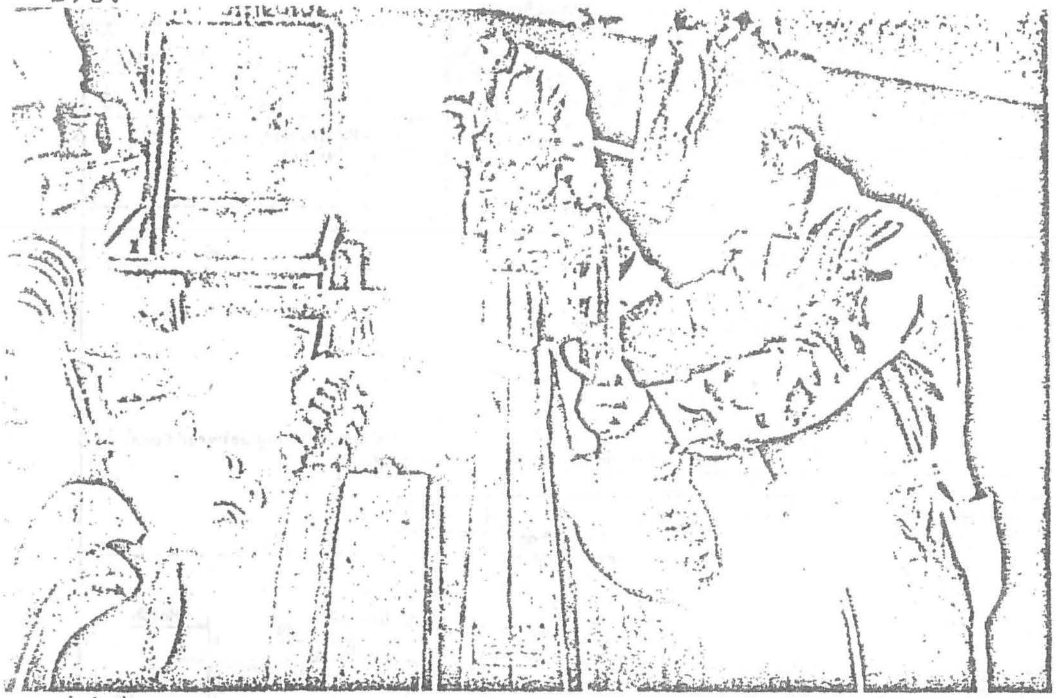
Propelling Machinery

Propulsion of the vessel is by a single screw driven by a direct-acting, condensing, 3-cylinder, triple-expansion reciprocating steam engine, operating normally at 76 revolutions per minute, supplied with steam of 200 pounds gage pressure and 440 degrees F. temperature at the throttle by two cross-drum sectional sinuous header straight-tube oil-fired boilers. The main engine, designed by the General Machinery Corporation, Hamilton, O., is designed to exhaust at 26 inches vacuum to a surface condenser bolted to the back columns of the engine.

The cylinders of the main engine are 24½, 37 and 70 inches in diameter and have a stroke of 48 inches. The



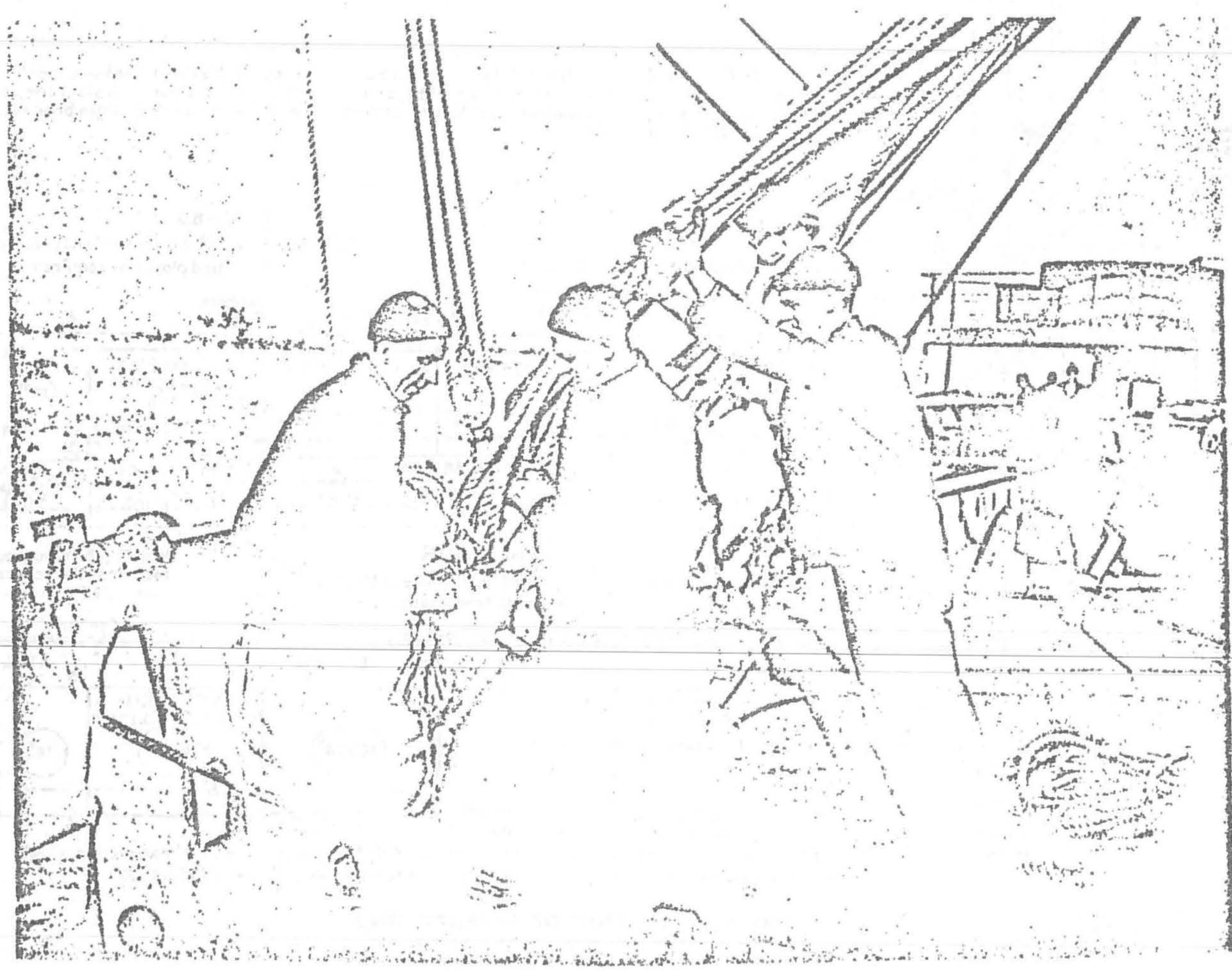
MIDSHIP SECTION OF LIBERTY SHIP

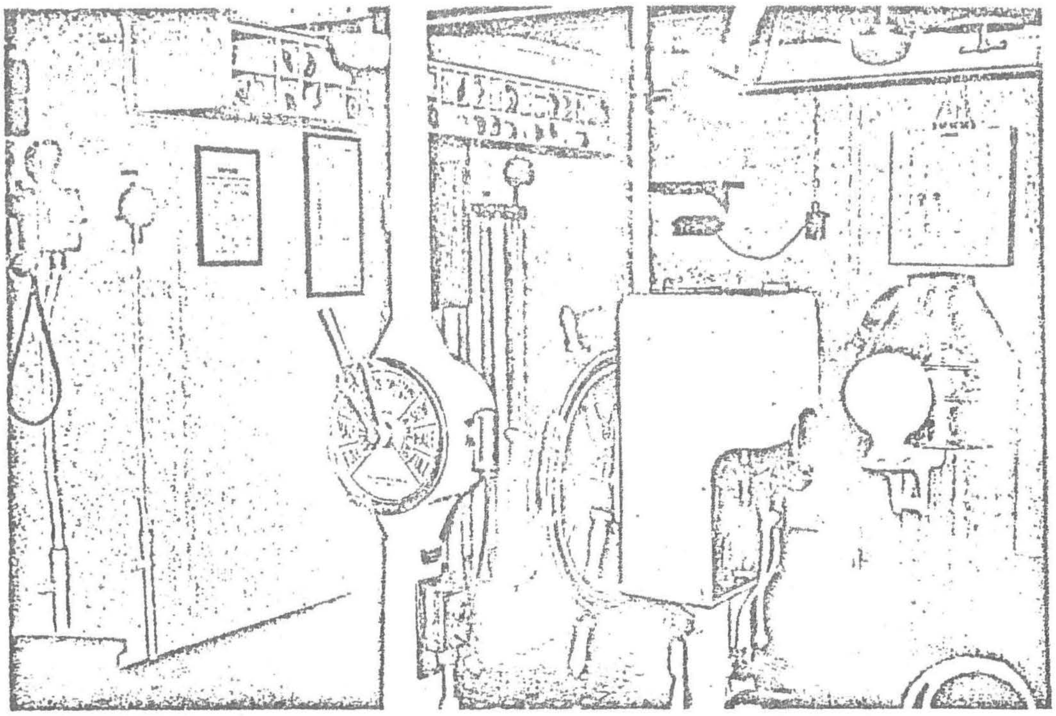


SEAMEN STANDING BY TO DROP THE STARBOARD ANCHOR, WHILE BELOW MEMBERS OF THE CREW SET THE MAST STAYS JUST BEFORE THE TRIAL RUN

cylinders are of cast iron and the high-pressure cylinder is fitted with a high grade cast-iron liner suitable for superheated steam. A liner is also fitted in the high-pressure valve chest. All of the cylinders are cast individually and bolted together, forming a unit block. The cylinders are covered with magnesia protected by sheet-iron lagging. The top of the engine has a mat covering with sheet iron, so split that sections can be easily removed. Relief valves are provided on all cylinders and on the intermediate and low-pressure valve chests.

The cylinder arrangement from forward to aft is as follows: High-pressure, intermediate-pressure and low-pressure. The direction of rotation of the engine, looking forward, is clockwise, with the crank sequence as





INTERIOR OF THE PILOT HOUSE WHICH IS COMPLETELY EQUIPPED WITH MODERN NAVIGATING UNITS, BUT WITH THE LUXURIES OMITTED. BELOW, THE GALLEY AND CREWS MESS ROOM ASSURE GOOD EATING

follows: High-pressure, low-pressure, intermediate-pressure.

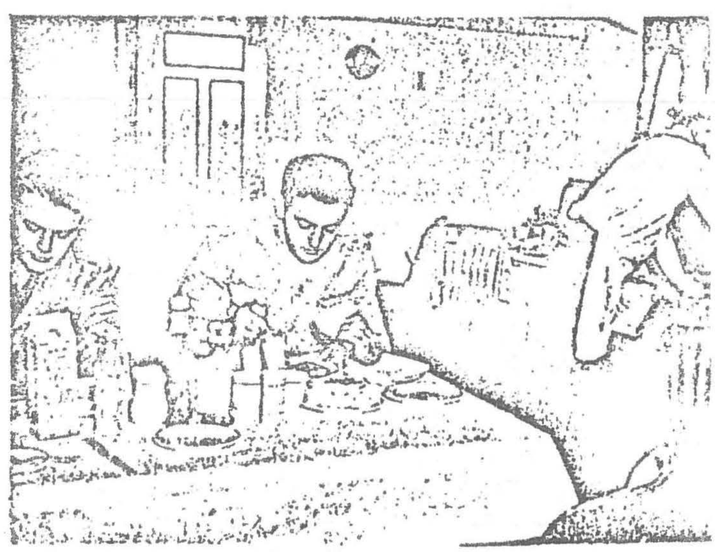
The steam chests are cast integrally with the cylinders, thus eliminating interconnecting steam pipes. The high-pressure cylinder is fitted with a piston valve, and the intermediate and low-pressure cylinders with double-ported box-type balanced slide valves. The valve gear is of the Stephenson link type with double bar. The eccentric rods are crossed and attached to the eccentric strap at the bottom and to the link bars on top. The valve stems bolted to the valves are attached to the link blocks with brass bushings and shims for adjustment. The valve stems are guided in the guide bracket attached to the cylinder with split brass boxes allowing adjustment for wear. The link blocks are of forged steel fitted with bronze gibs.

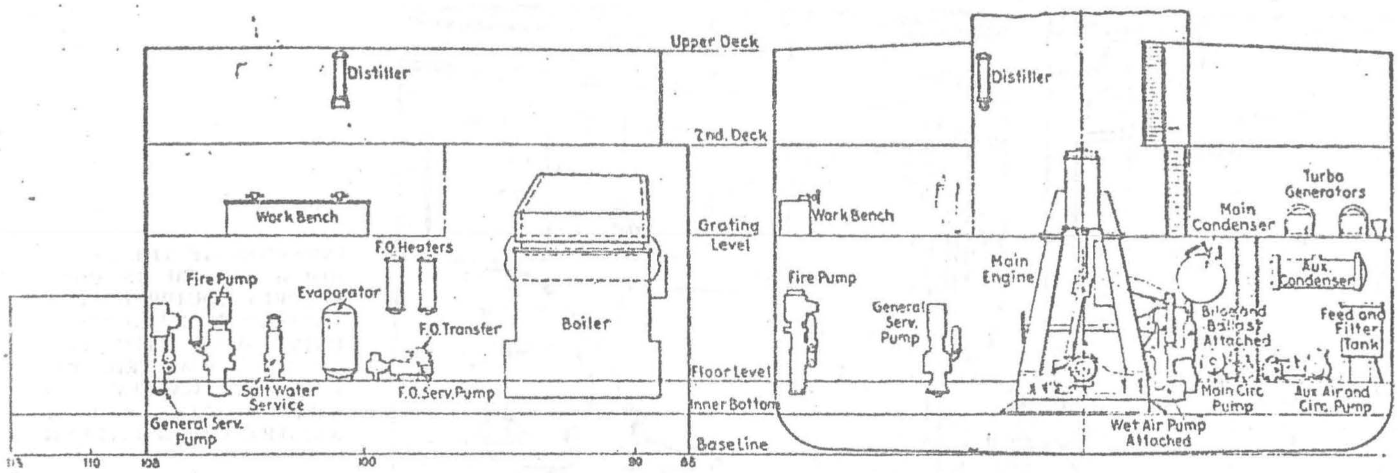
The valves admit steam as follows: High-pressure inside steam, intermediate and low-pressure outside steam. Lockwood and Carlisle rings are fitted to the high-pressure piston valve and to the high and intermediate-pressure pistons. The low-pressure piston has a Ramsbottom ring with coach springs. Metallic packing is used throughout for all piston rods and valve stems.

The eccentrics and straps are of cast iron, the straps being lined with babbitt metal and the eccentrics keyed to the crankshaft. The eccentric rods are of forged steel and are bolted to the eccentric straps. The upper part has bronze boxes for attaching to the link bar pins. One set of link bar pins is extended to take the drag rod bronze bearings.

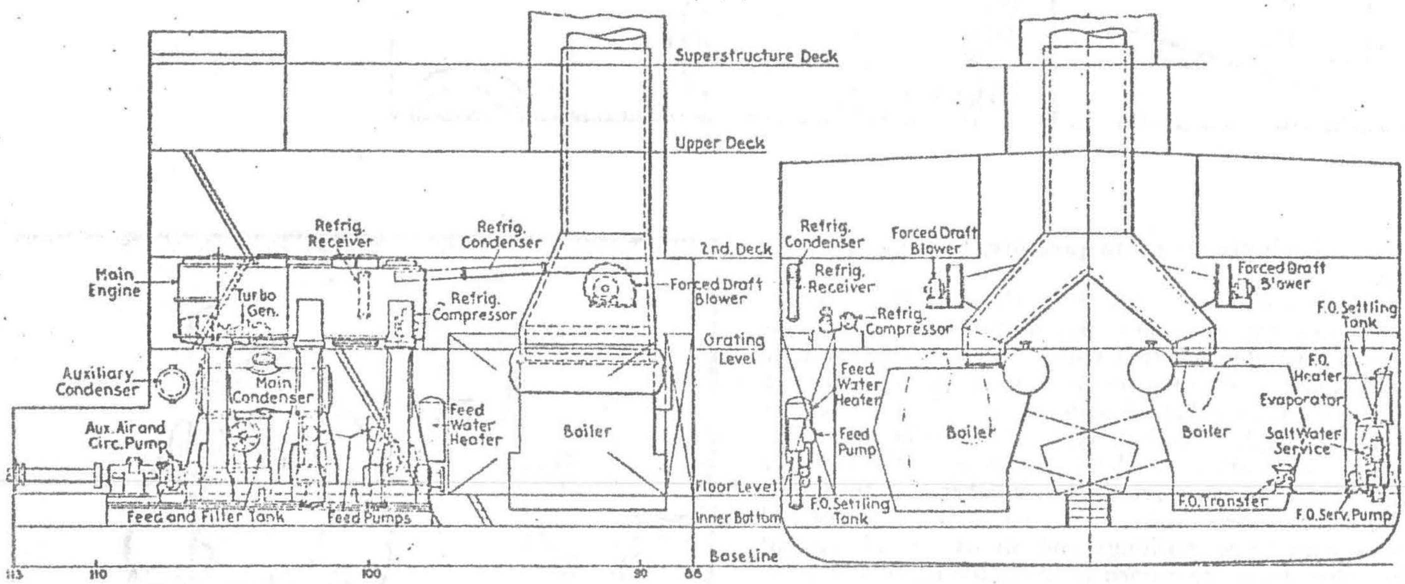
The bedplate is of cast iron in three sections held together by fitted bolts. Cross girders provide flat bottom recesses for the main bearings. The bottom of the bedplate is flat, but slightly tapered, and is bolted to the tank top through chocks with holding-down bolts. The columns are of box section, there being three front and three back columns. The lower ends of the columns are bolted to the bedplate and the upper ends to the cylinder feet. To the back columns are bolted cast-iron crosshead guides provided with water cooling. The astern guides are of cast iron bolted to the ahead guides.

The crankshaft, of forged steel, is of the built-up type,

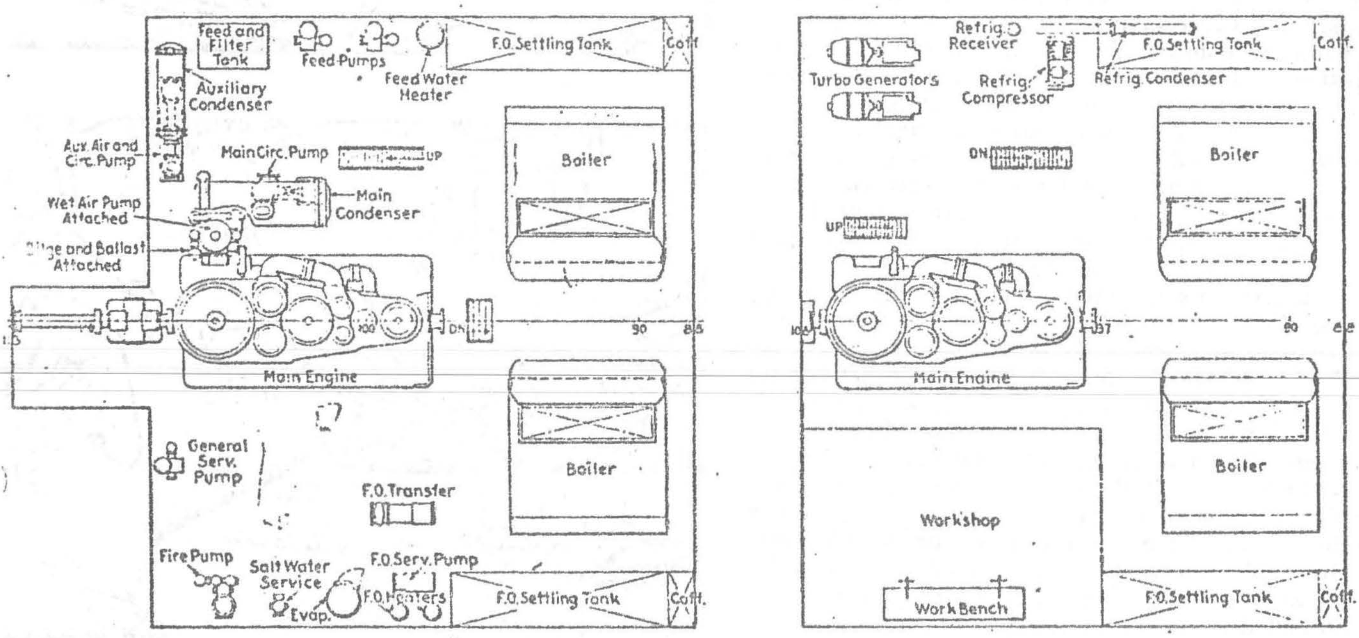




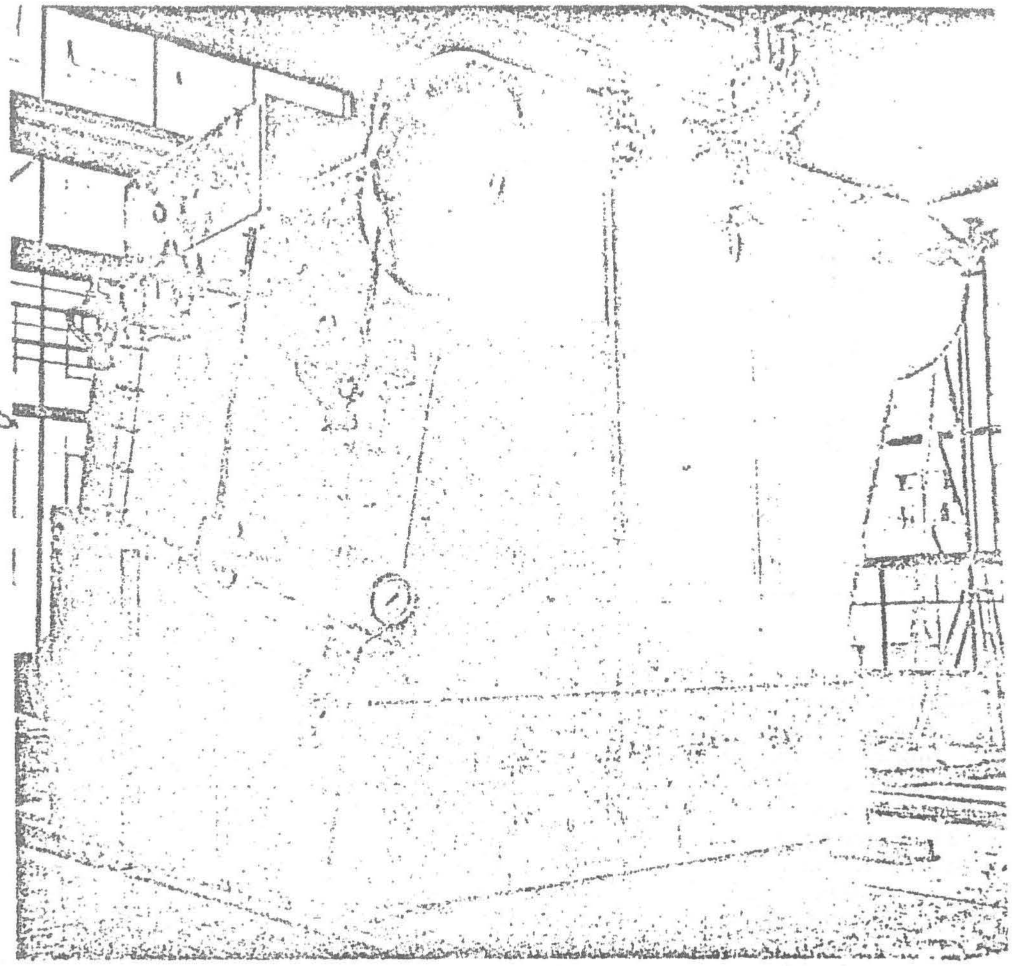
ELEVATION STARBOARD LOOKING TO CENTERLINE OF ENGINE AND BOILER ROOM, AND SECTION AT FRAME 100 LOOKING AFT



ELEVATION AT CENTERLINE OF ENGINE AND BOILER ROOM LOOKING TO PORT, AND SECTION AT FRAME 100 LOOKING FORWARD



PLAN VIEWS AT FLOOR LEVEL AND AT GRATING LEVEL OF ENGINE AND BOILER ROOM

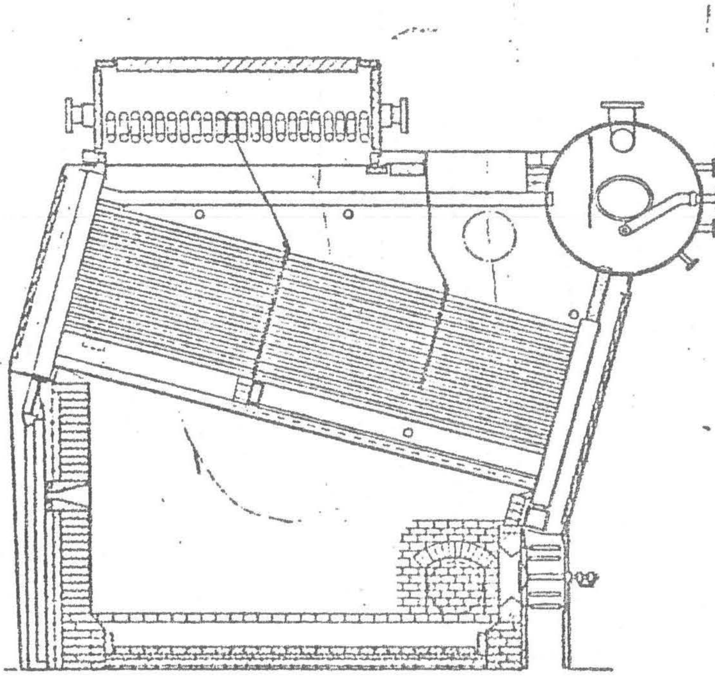


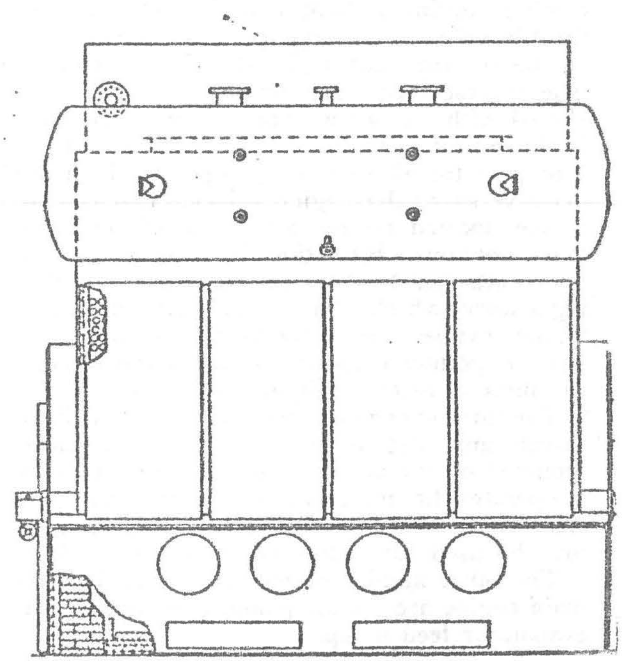
SHOP VIEW OF A SECTIONAL-HEADER, STRAIGHT-TUBE, CROSS DRUM MARINE WATERTUBE BOILER SELECTED FOR LIBERTY SHIPS BECAUSE OF RELIABILITY AND SPEED OF PRODUCTION. BELOW IS THE ARRANGEMENT DRAWING OF THIS BOILER

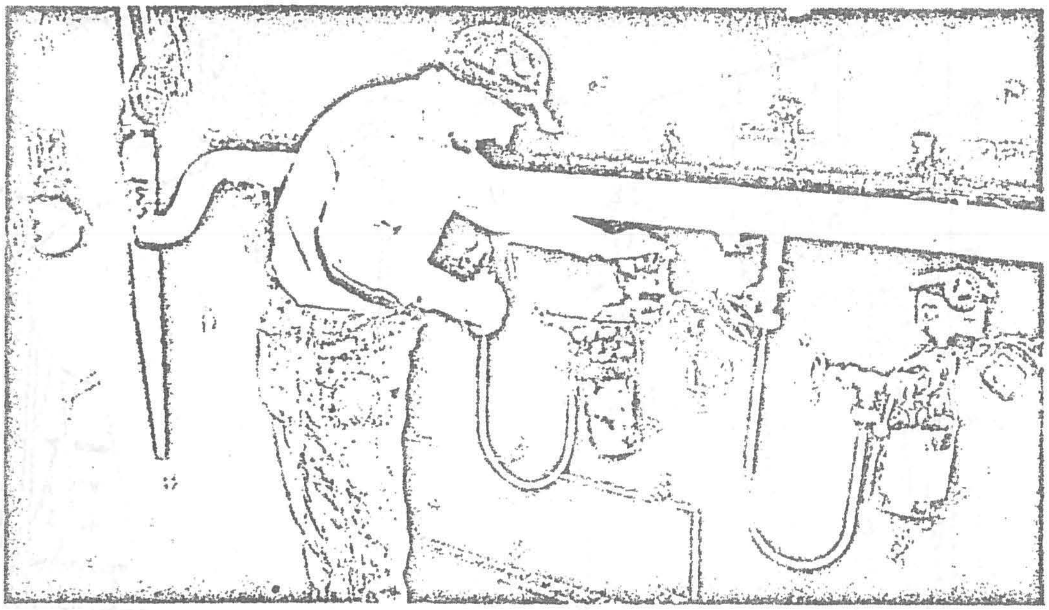
14¼ inches in diameter, made in two sections with the high-pressure and intermediate-pressure forming the forward section and the low-pressure the after section. The crankpins and shafts are shrunk into the crankwebs. All eccentrics are bolted to the forward shaft section. The low-pressure section carries the turning gear worm wheel. Coupling flanges are forged integral with the shaft and are held by fitted bolts.

The main bearings consist of upper and lower cast-iron babbitted boxes, fitted into a recess on the bedplate and held in place with a flat steel bearing cap. The main bearing bolt extends through to the bottom of the bedplate with shims for taking up wear.

The crossheads are of the single slipper type of forged steel. The crosshead slipper is of cast iron and is bolted to the crosshead. The go-ahead side is babbitted. A







LIGHTING UP ONE OF THE BOILERS, WHICH IS FITTED WITH FOUR OIL BURNERS WORKING ON FORCED DRAFT

comb is attached to the crosshead slipper, dipping into the trough at the bottom of the crosshead guide, providing lubrication for the ahead guide, in addition to two feeds from a syphon box on the cylinders. The astern guides are provided with cups for hand lubrication.

The connecting rods are made of forged steel, with cast-steel babbited boxes on the crank and bronze boxes for the crosshead end. Laminated brass shims are provided for taking up wear.

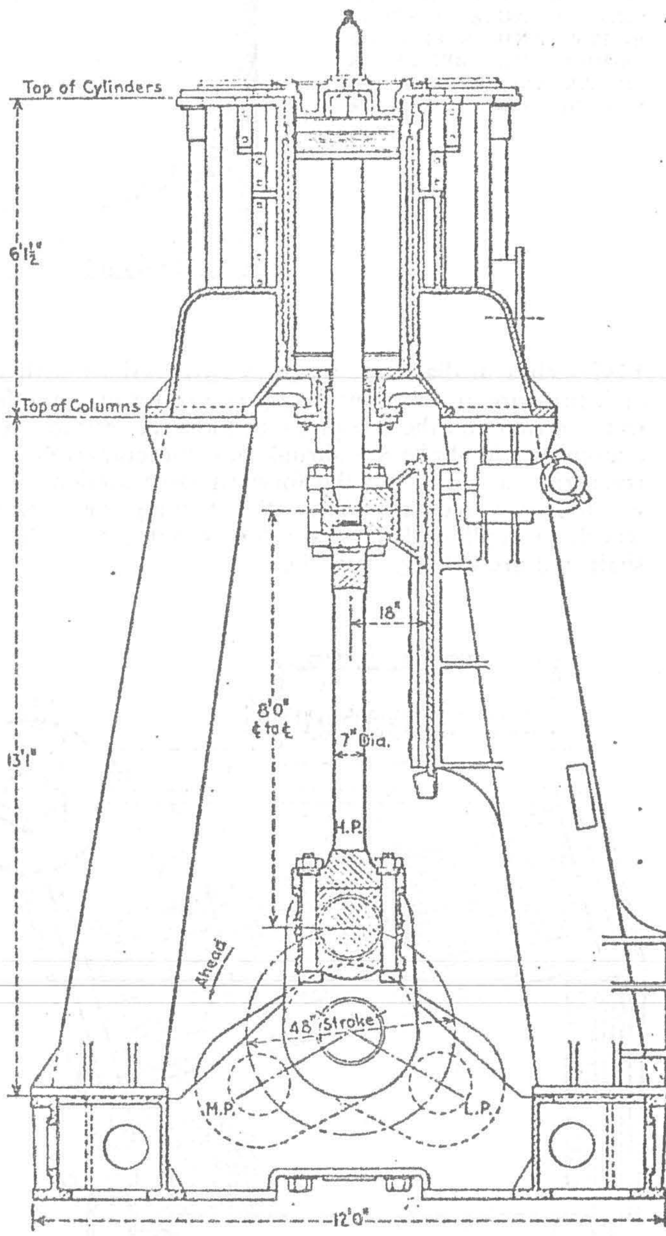
The pistons are made of cast iron of box section and are provided with follower rings. The piston clearances are 3/8 inch at the top and 1/2 inch at the bottom. The piston rods are of straight cylindrical construction, with tapered ends for securing the pistons and crossheads.

Relief valves are fitted on the top and bottom of all cylinders and on top of the steam chest covers. Drain valves are mounted on the bottom of all cylinders and steam chests. The throttle valve is of the single seat, balanced poppet type. The body is a steel casting, while the valve and seat are of Monel metal. There is a pilot valve for relieving the pressure on the balancing piston for easy operation of the valve. A butterfly valve for quick throttling is built into the extension neck of the throttle valve to the high-pressure steam chest.

The reverse shaft, 6½ inches in diameter, is of steel. The reverse levers are keyed to the reverse shaft and slotted with the screw arrangement to permit a change in the cut-off of the individual cylinders. The reversing gear is of the all-around type operated by a single-cylinder reversing-valve engine, 6 inches diameter by 7 inches stroke, located on the after side of the high-pressure front column. Reversing is accomplished through a worm attached to the reversing engine crankshaft driving a worm wheel. The pin on the worm wheel connects to the reverse arm on the reverse shaft through a drag rod. A pointer is located on the worm wheel indicating the ahead or astern position of the engine.

The turning engine consists of a single-cylinder, steam-driven unit, 8½ inches diameter by 7 inches stroke, mounted on the after end of the bedplate of the engine. It operates through two sets of worm gears to the crankshaft of the engine. This engine is reversible so that it may be used for setting the valves or making repairs.

The other auxiliaries mounted on and driven off the main engine are the air pump, two bilge pumps and the evaporator feed pump.



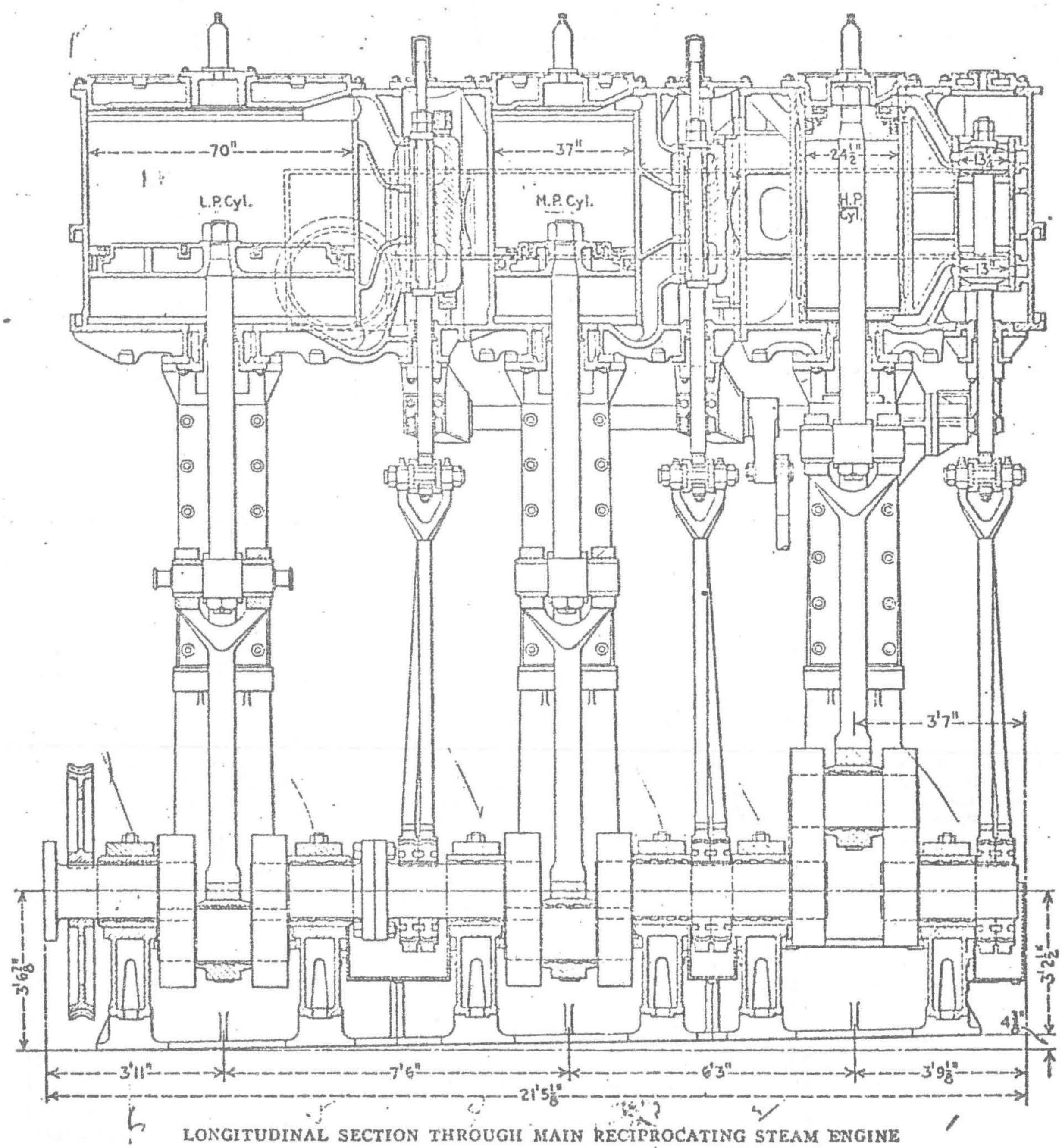
SECTION THROUGH LIBERTY SHIP MAIN ENGINE

The air pump is of the Edwards single-acting type, 24 inches in diameter by 26 inches stroke, bolted to the bedplate and the after column. The pump body is of cast iron, with removable bronze liners and cast-iron bucket with a bronze bucket rim. The lower end of the liner has cast ports through which condensate is admitted to the pump cylinder. This type of pump requires no suction valves. The discharge valves, of the bronze Kinghorn type without springs, are located on the headplate, bolted to the top of the liner. The valves are accessible through an inspection door on the side of the pump body. The bucket rod is of Muntz metal, the upper end being secured to the air pump crosshead. The air pump discharge chamber is provided with an overflow pipe discharging into a funnel, draining to the bilge.

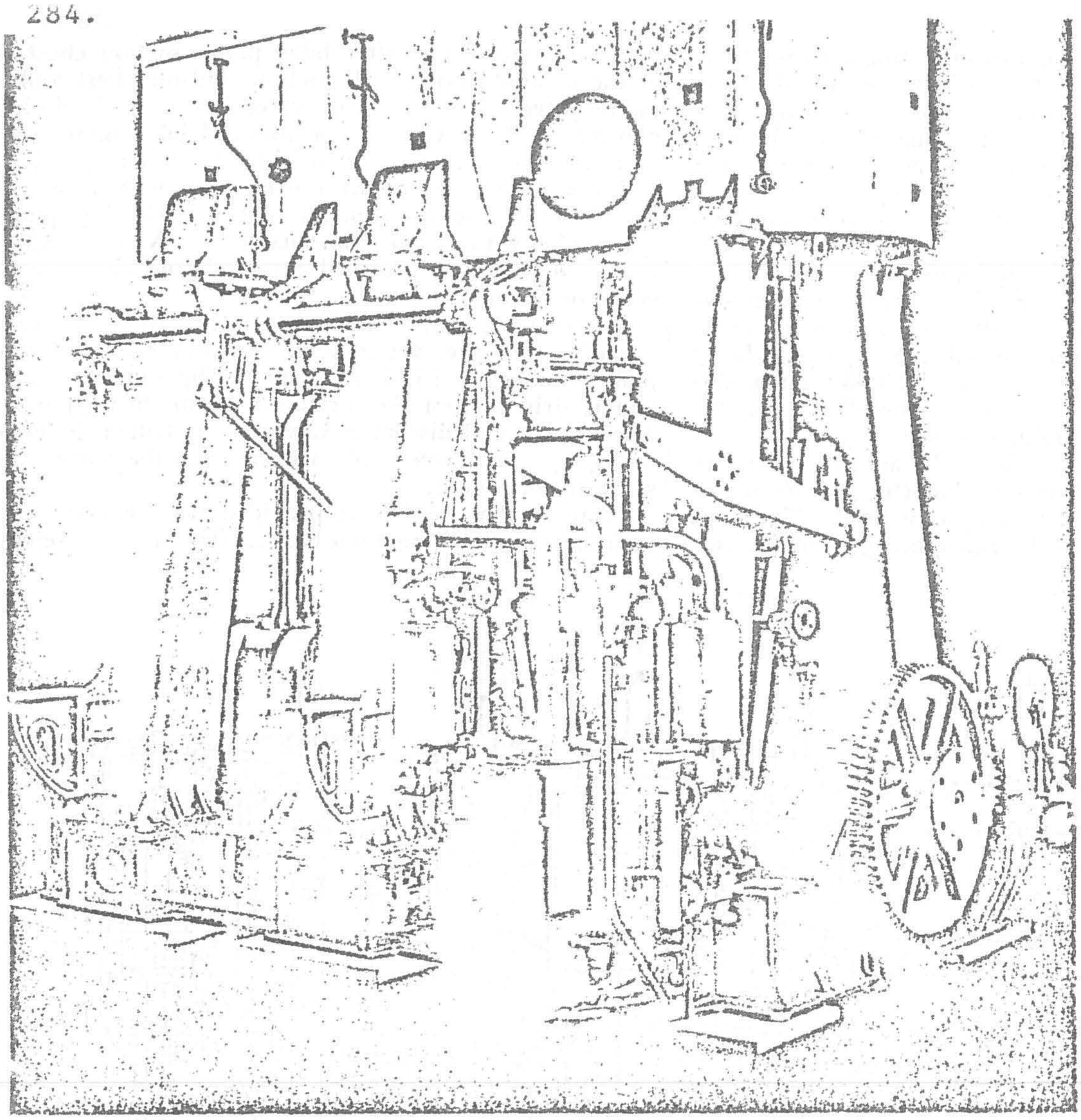
Attached one on either side of the air pump are two bilge pumps, each 4½ inches diameter by 26 inches stroke, driven from the air pump crosshead. The bilge pumps are of cast iron with bronze plungers of the vertical ram type. The after bilge pump suction chest is of the manifold type, with suction shut-off chest and a safety valve. The discharge valve has a quick closing non-return check valve. The forward bilge pump suction valve is also of the manifold type and is provided with double suction, one with direct suction from the sea and the other suction from the bilge. Each bilge pump is provided with cast-iron air chambers. A switch valve in the discharge is provided for discharge either overboard or to the deck.

The evaporator feed pump is attached to the forward side of the low-pressure column. It is of the single-acting plunger ram type, 2 inches in diameter by 9 inches stroke, and is driven from the air pump beam through links. The suction and discharge valve box is bolted direct to the pump. The box is of cast iron and the valves and seats are of bronze.

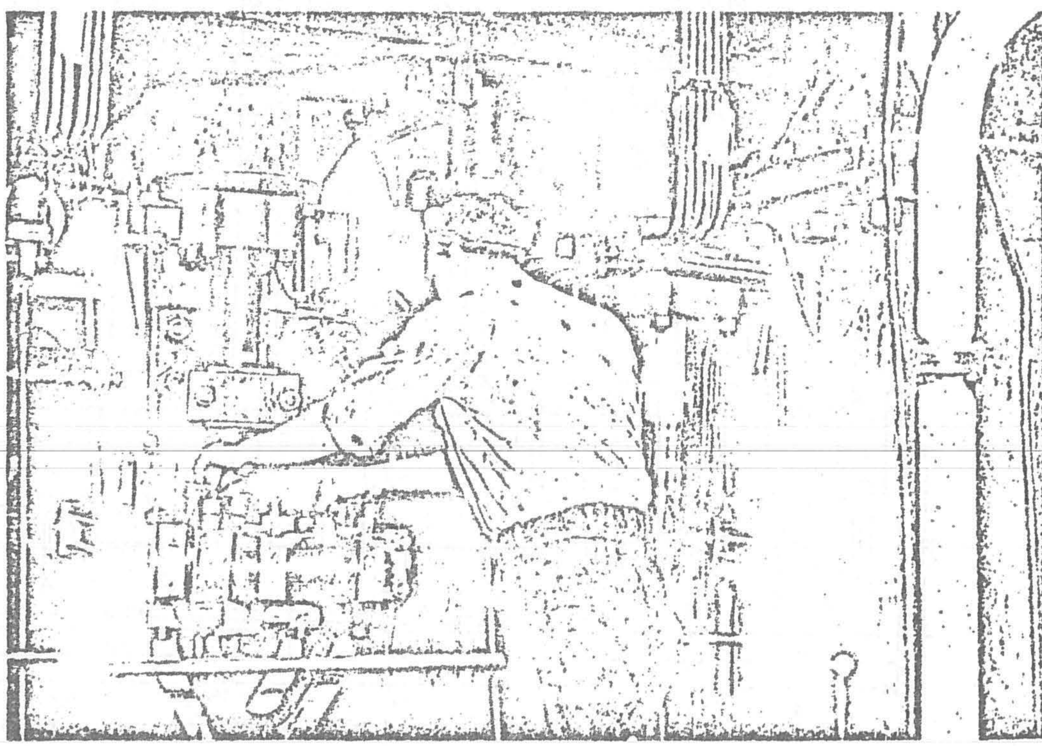
Water-cooling service is provided for the eccentrics, main bearings and crankpin boxes. The nozzles connect

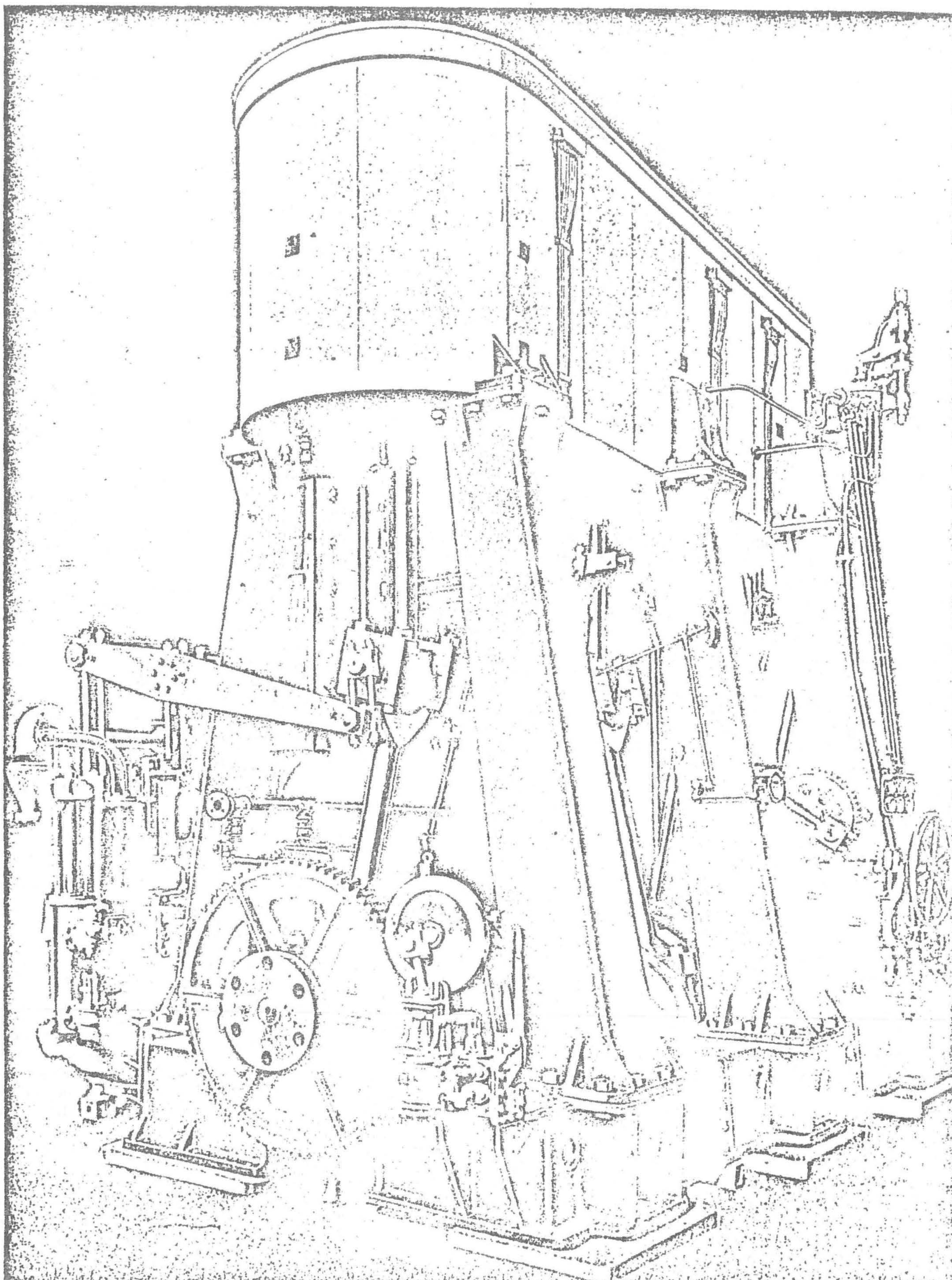


LONGITUDINAL SECTION THROUGH MAIN RECIPROCATING STEAM ENGINE

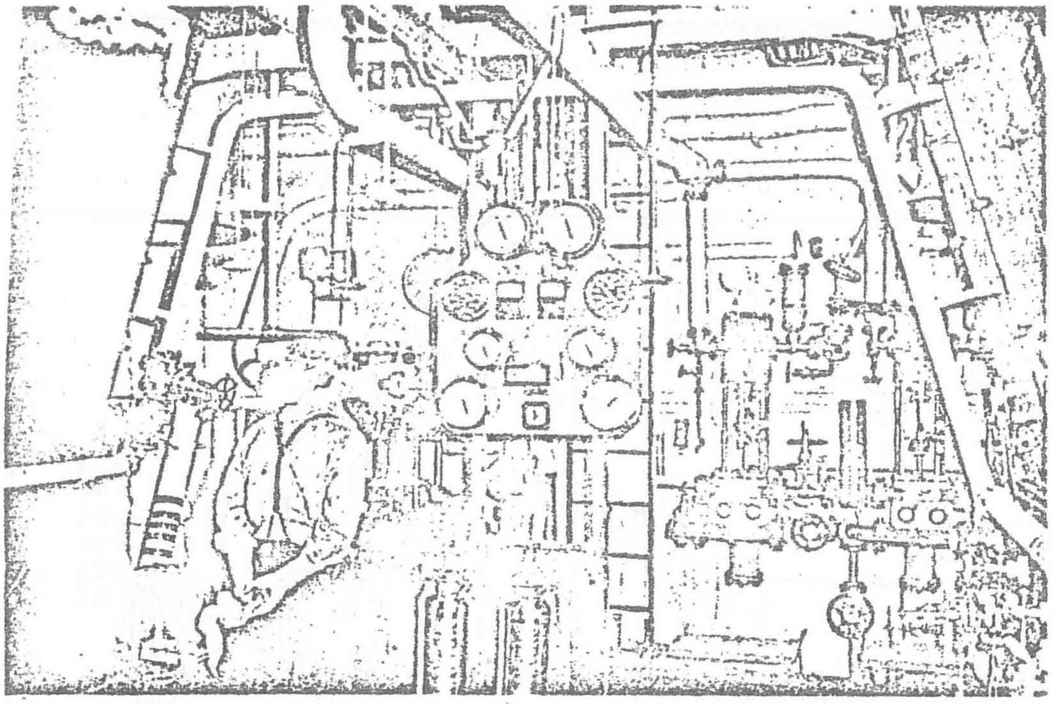


ABOVE IS THE STARBOARD SIDE OF THE MAIN ENGINE SET UP IN THE BUILDER'S PLANT, SHOWING ATTACHED FEED PUMP, AND BILGE AND BALLAST PUMPS.





PROPULSION IS BY A DIRECT-ACTING, CONDENSING, 3-CYLINDER, TRIPLE-EXPANSION RECIPROCATING STEAM ENGINE



FIRING AISLE OF A LIBERTY SHIP SHOWING FRONTS OF THE BOILERS, THE GAGE BOARD AND UNITS OF PUMPING EQUIPMENT

to the main service piping through a swivel joint, with necessary valves to be used on individual parts when required. The crosshead guides are provided with continuous cooling, and a connection is made for the cooling coil in the thrust block. The cooling piping is connected to the sea water piping in the vessel.

The main steam pipe is 8 inches in diameter and the exhaust pipe is 25 inches in diameter. To permit admitting high-pressure steam to the various cylinders, a by-pass starting valve is bolted to the throttle valve, and pipe connections made to the intermediate and low-pressure cylinders as well as to the reversing engine.

Forced lubrication is provided for the high-pressure cylinder by a nozzle connection in the throttle valve and to the high-pressure piston rod metallic packing. Also special leads are provided on each side for the intermediate-pressure slide valve. Tallow cocks are used for lubricating the low-pressure slide valve and for the domes on the intermediate and low-pressure valve stems.

For main engine lubrication, brass oil boxes are located at the top of the cylinders, with syphon feeder wicks and pipes leading to individual running parts of the engine. The eccentrics are lubricated by individual cups on the eccentric rods, these being hand lubricated. On each main bearing is located an oil box with wicks for the lubrication of the bearings. Individual lubricating oil boxes are also located on the air pump beam links and the air pump crosshead.

The thrust bearing, of the Kingsbury type, consists of a semi-steel housing with two journal bearings, a thrust shaft, 14¼ inches diameter, with integral forged collar, and two pairs of thrust shoes, two for ahead and two for astern thrust. Each shoe covers about 60 degrees of arc. They are individually adjustable fore and aft by jack screws. The journal bearings have removable lower half shells lined with babbitt metal. The upper half bearing babbitt is cast in the housing cover, leaving large pockets for oil. The thrust bearing is bolted to the tank top independent of the engine bedplate.

Lubrication is automatic, being accomplished by a metal scraper riding on the collar and distributing oil to the collar surfaces and the journal bearings. Ordinarily, the bearing will cool itself by radiation, but a small copper cooling coil is provided in the oil bath for emergencies. The thrust shaft collar is 33 inches in diameter and 5 inches thick. The ends of the bearing are sealed by stuffing boxes around the shaft.

The weight of the main engine, complete, with attached auxiliaries is approximately 271,000 pounds.

Shafting and Propeller. The line shafting is of forged steel 13½ inches in diameter. The journals for steady bearings are about 16 feet 6 inches apart. The steady bearings, of cast iron with the bottom section lined with bearing metal, are of the wick-oiled type with reservoirs for solidified grease. The after bearing is fitted with bearing metal on both top and bottom.

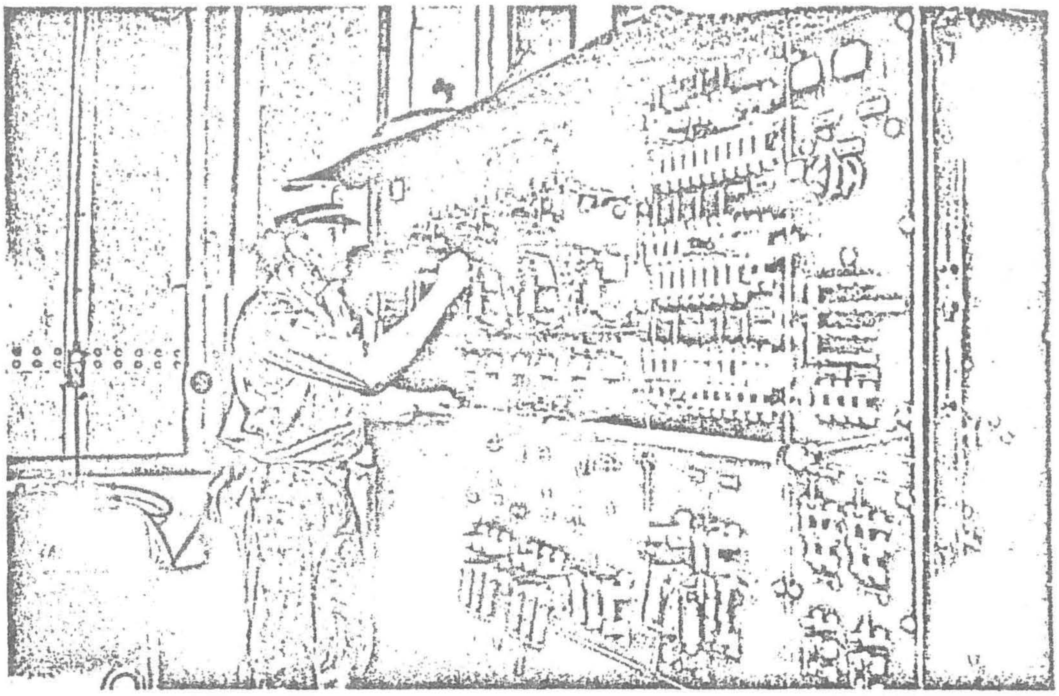
The bulkhead stuffing boxes and glands are of cast iron with brass bushings. The propeller shaft, of forged steel with a diameter of 15¼ inches, is fitted with a composition liner extending the full length of the shaft except in way of the coupling and the propeller taper. The after end of the liner is carried into the recess in the propeller hub where it is made watertight by means of a rubber ring. The after end of the shaft is tapered to fit the bore of the propeller. The forward end of the shaft has a coupling forged integral with the shaft and is arranged for withdrawal inboard.

The stern tube is of cast iron, in one piece, secured by a flange to the bulkhead at the forward end. The after end of the tube is fitted into the stern frame and locked by a steel nut. The tube is fitted with a composition bushing lined with sectional lignum vitae staves.

Water service pipes supplied from the circulating system are fitted along the shaft tunnel for emergency cooling of the steady bearings and lubrication of the stern tube bearings.

The propeller is a right-hand, 4-bladed, manganese bronze or cast steel, solid wheel about 18 feet in diameter. The blades are of airfoil section.

Boilers. Steam is supplied at 220 pounds per square inch gage pressure and 450 degrees F. total temperature by two oil-fired watertube boilers arranged with a fore and aft firing aisle at the forward end of the machinery space amidship. The boiler design selected is one that has proved its reliability and efficiency in various types of sea duty, that can be manufactured in quantities at a



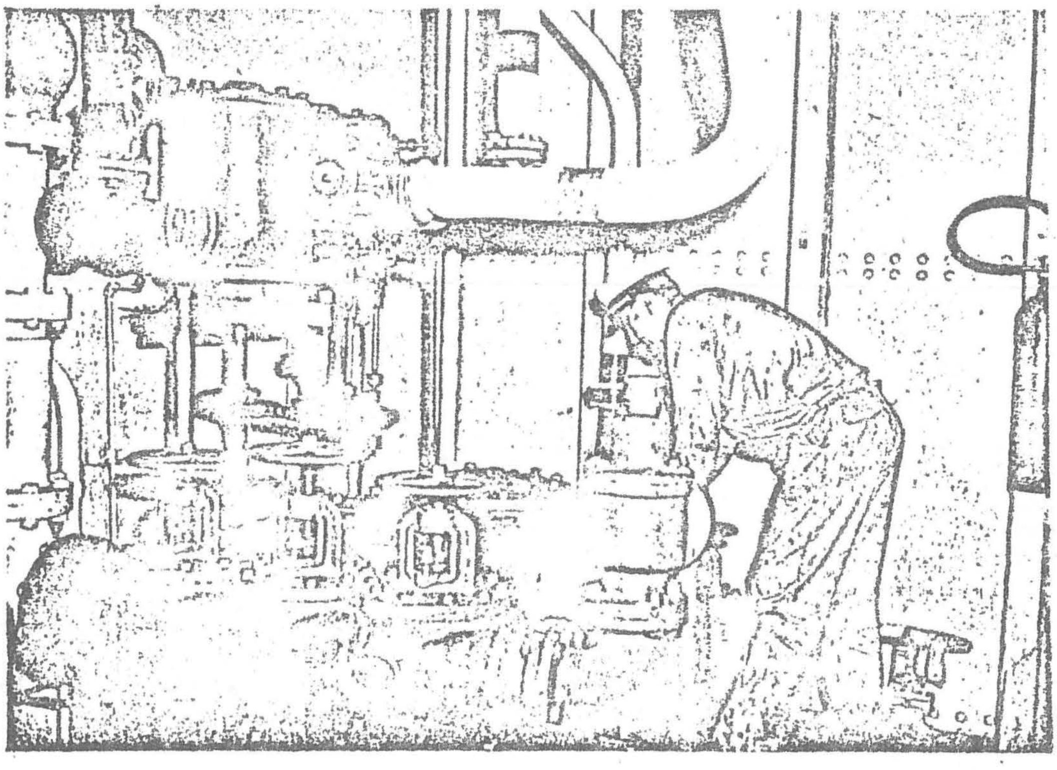
THE MAIN SWITCH BOARD IS OF THE LIVE-FRONT TYPE WITH PANELS FOR CONTROL OF GENERATORS, AS WELL AS OF POWER AND LIGHTING CIRCUITS

high rate of speed, and that can be easily inspected and cleaned. This is the Babcock & Wilcox section-header, 2-inch tube design, with oil-burning refractory furnace and overdeck superheater.

The boilers are of the conventional 3-pass, straight-tube cross-drum type, with 22 sections each having one lower row 4-inch tube and seven groups of 2-inch tubes 13 feet long between tube plates, designed to evaporate 24,000 pounds of steam per hour with 230-degree feed temperature. The boilers are capable of sustained operation at 30 percent excess evaporation. They are fitted for burning bunker C fuel oil under forced draft at a normal rate of evaporation of 5 pounds per square foot and at a sustained overload of 6.5 pounds per square foot of boiler water heating surface. They are equipped with steam soot blowers.

Each boiler is fitted with a convection-type superheater located after the first gas pass of the boiler in a separate casing on top of the main boiler casing and arranged so that all the steam generated in the boiler will pass through the superheater. No air heaters or economizers are fitted.

Each boiler is fitted with four oil burners working under forced draft. Two fuel-oil transfer pumps draw from high and low suctions in the settling tanks, and in



THE FIRE MAIN SYSTEM IS SERVED BY THE FIRE PUMP SHOWN, WITH THE GENERAL SERVICE PUMP AVAILABLE AS A STANDBY

an emergency from the transfer suction main through a duplex suction strainer, and discharge to the boiler service main through a duplex discharge strainer. Each fuel-oil service pump is arranged to discharge into a single header and led, via duplex strainer and oil heater, to the burner header on each boiler front. A combined ballast and fuel-oil transfer system is installed and arranged so that either ballast water or fuel oil can be transferred from any one fuel oil and ballast tank to any other fuel oil and ballast tank, and vice-versa. Two fuel-oil heaters are installed, each of which has a capacity to heat 3500 pounds per hour of bunker C fuel oil from 100 degrees to 230 degrees F. when supplied with steam at 125 pounds gage pressure.

The boiler feed system is of the open feed type, consisting of feed pumps, feed and filter tank, exhaust heater, grease extractor and traps. The suction sides of the feed pumps are connected to the feed and filter tank and the reserve feed tanks. The feed pumps discharge to the boilers via the grease extractor and exhaust feed heater. The feed pumps are also arranged to discharge through the grease extractor, thence through an auxiliary feed line to the boilers. Feed pump suction and discharge connections are so arranged that either pump may be overhauled while the other is in service. A connection is led from the reserve feed tank to the main and auxiliary condensers for emergency feed make-up. The exhaust feed heater is supplied with steam at 10 pounds gage from the auxiliary exhaust line and drains are led to the feed and filter tank.

The feedwater heater is of the multi-pass closed type capable of heating 48,000 pounds of feedwater per hour from 125 degrees to 230 degrees F. when using exhaust steam from the auxiliary exhaust system.

The filter and grease extractor installed in the feed line between the feed pumps and feed heater is of the twin type, each unit of which is capable of filtering the entire amount of boiler feedwater. The feed and filter tank is designed to filter all of the condensate and to provide storage capacity for the boiler feed.

Auxiliaries

Vacuum Equipment. The main condenser is of the 2-pass surface condensing type of about 3000 square feet of cooling surface, designed to maintain a vacuum of 26 inches when the main engine is developing normal full power ahead. At sea the main condenser also handles any excess auxiliary exhaust. The condenser is bolted to the back columns of the main engine.

The auxiliary condenser is also of the 2-pass type, containing about 700 square feet of cooling surface, capable of condensing the exhaust from one generator plus the exhaust from winches and other auxiliaries during port operation. The condenser is mounted directly over a reciprocating combined auxiliary circulating and wet air pump.

Evaporator Plant. The evaporator plant consists of a vertical submerged-type salt water evaporator with a capacity of 20 short tons per 24 hours and a vertical distiller of 6000 gallons capacity per 24 hours. Steam is supplied to the coils at 125 pounds gage pressure. Vapor is generated at 5 pounds gage and is discharged to the distiller and from there through a 60-gallon test tank to the distilled water and drinking water storage tanks, reserve feed tanks and to the bilge. Cooling water to the distiller is supplied by the salt water service pump.

Salt Water Systems. The vessel is provided with the following salt water system: Main circulating, auxiliary circulating, water service, bilge, fire and clean ballast.

Circulating water for the main condenser is supplied by a centrifugal pump driven by an enclosed vertical reciprocating engine. Cooling water for the shaft alley water service and main engine service is supplied from the main circulating system. Circulating water for the auxiliary condenser is supplied by the auxiliary circulating and wet air pump.

An independent steam-driven salt water service pump takes suction from the sea and supplies water for the distiller, refrigerator condenser, sanitary system and an emergency connection to the shaft alley service. One of the attached bilge pumps is arranged to serve this system when the main engine is in operation at sea.

The bilge system is arranged to permit pumping from all of the holds, machinery space, and all void compartments in contact with the inner bottom and to take care of all drainage between deck spaces under all practical conditions. The arrangement of the bilge system is such as to prevent the possibility of water or oil passing into the cargo and machinery spaces, or from one compartment to another.

The fire main system is served by the fire pump, with the general service pump as a standby.

For the clean ballast system a ballast main runs between the peak tanks with suction and discharge connections in the engine room to the general service pump and to the bilge and ballast pumps.

Fresh Water Systems. Fresh water for drinking and wash basins, showers and baths is carried in tanks located amidships above the second deck.

The potable and washing water system consists of a motor-driven pump complete with automatic control devices, a standby hand pump and a pressure tank. The fresh hot washing water system consists of a storage tank with heater coils and necessary equipment, functioning as a thermo-syphon system. A similar smaller system is supplied aft for the hospital.

Refrigeration for Ship's Service. A Freon direct-expansion refrigerating system supplies refrigerant to the ship's refrigerated stores, to the scuttle butt and to an ice-making tank. The Freon-12 refrigerating unit comprises a vertical, air-cooled, multi-cylinder, single-acting compressor; a horizontal condenser; a liquid receiver, strainers and dryer; controls and piping. Circulating water is supplied from the sanitary system.

Pumps. The following pumps are installed for the various services on the vessel:

1 horizontal centrifugal main circulating, 3650 gallons per minute, 40 feet head, driven by steam engine.

1 horizontal duplex plunger potable water, 5 gallons per minute, 60-pound head, ½ horsepower motor.

1 potable water, 5 gallons per minute, manually operated.

Steam Reciprocating Pumps

2 vertical simplex double-acting feed, 12 by 8 by 12 inches, 300-pound head.

1 vertical duplex double-acting, fire and bilge, 10 by 11 by 12 inches, 560 gallons per minute, 125-pound head.

1 vertical duplex double-acting ballast and general service, 10 by 11 by 12 inches, 560 gallons per minute, 125-pound head.

1 vertical duplex double-acting fuel-oil transfer, 10 by 11 by 12 inches, 320 gallons per minute, 50-pound head.

2 vertical simplex double-acting fuel-oil service, 7½ by 4 by 10 inches, 8 gallons per minute, 250-pound head.

1 vertical simplex double-acting salt-water service, 6 by 8 by 8 inches, 140 gallons per minute, 50-pound head.

1 horizontal simplex double-acting auxiliary circulating and air, 10 by 12 by 12 by 12 inches.

Attached Pumps

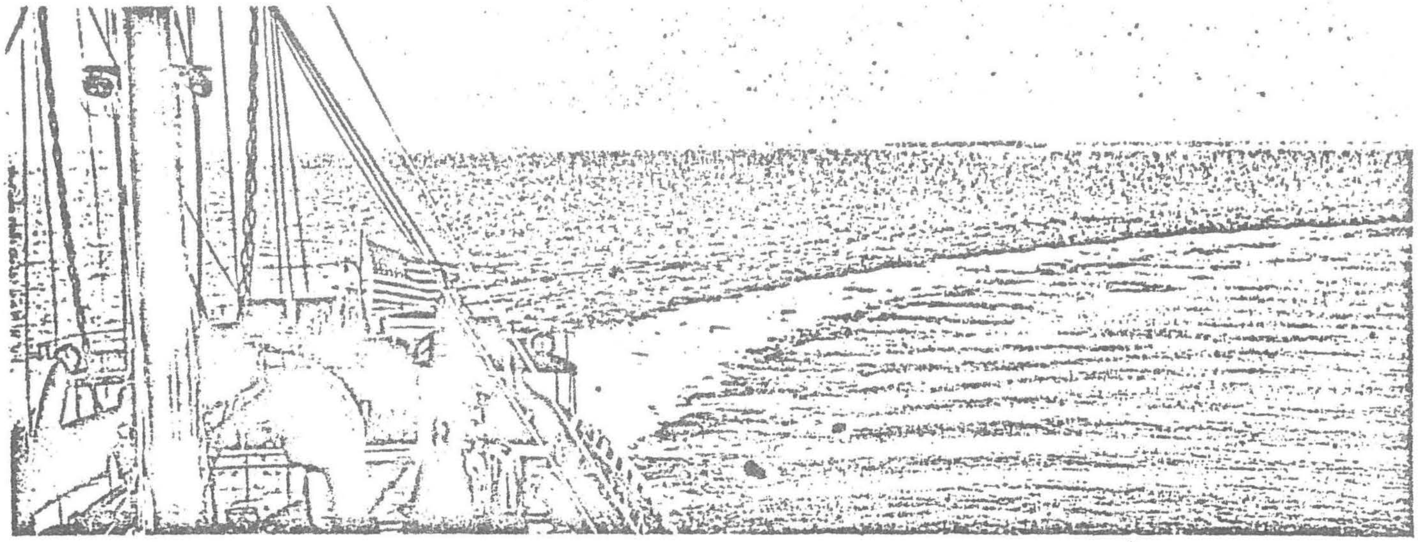
1 Edwards air.

2 ram bilge.

1 ram evaporator feed.

All of the steam reciprocating pumps operate on boiler pressure with about 10 pounds back pressure. For an auxiliary means for feeding the boilers and also for use in washing down, etc., there is provided a 2½-inch double-tube injector, taking suction from the hotwell tank or reserve feed tank and discharging to the auxiliary feed line.

Electrical Plant. The electrical plant consists of two 20-kilowatt generators driven by direct-connected reciprocating, forced-lubricated steam engines, supplying 120-



TURNING A CIRCLE WITH THE SHIP AT FULL SPEED

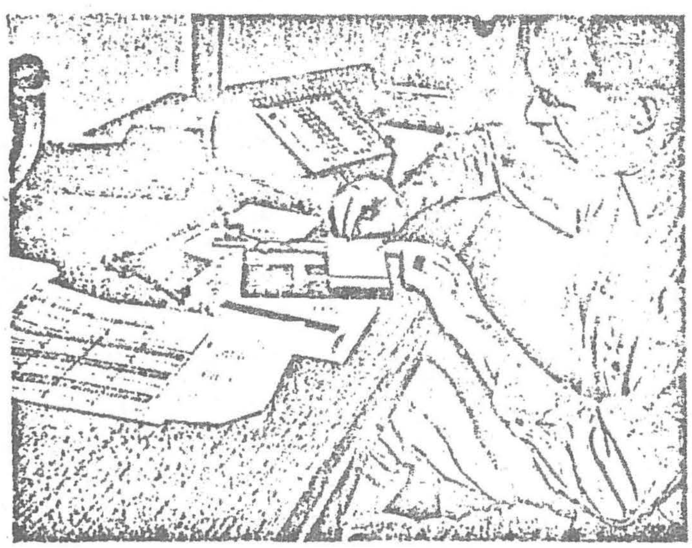
Liberty Ships Rigidly Tested

Almost every day a new Liberty ship is up for trial. Although these ships are no greyhounds for speed, and are far from beautiful in their drab warpaint, nevertheless they are rugged vessels suited to the job for which they were designed. The first few have already won their spurs, and have crossed the seas loaded with American bombers and fighter planes, tanks, guns, trucks and food. They're practically a mass-production product, all of one single simplified design, with an overall length of 441 feet 6 inches and a beam of 57 feet. More than two thousand of them will join America's new 22,000,000-ton Victory Fleet before the end of 1943.

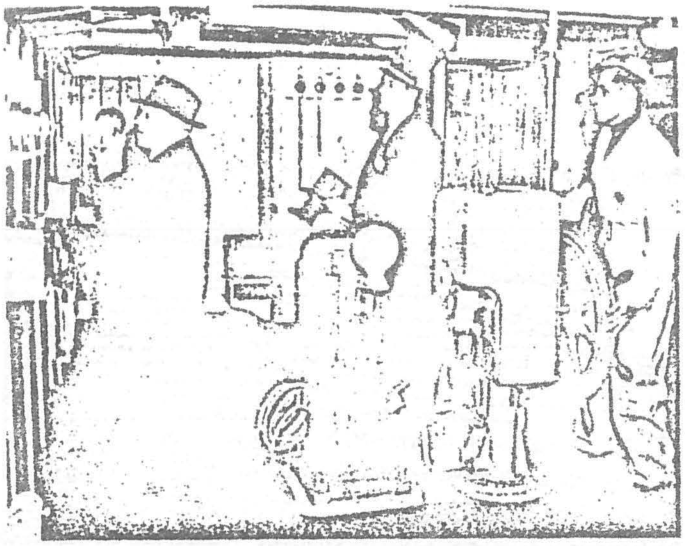
But regardless of the excellent performance record they are establishing as a class, each new Liberty ship must first prove her own seaworthiness before she's sent out on one of the biggest jobs of this war, the job of delivering the weapons which will ultimately smash the Axis. Until a board of experts has passed upon her individual fitness in exhaustive sea trials, not a single bag of grain, not a single round of ammunition is entrusted to her holds.

The United States Maritime Commission whose naval architects and marine engineers designed these ships, and whose responsibility it is to build and man this great new Victory Fleet, is mighty particular about such matters, and rightly so, when you consider the millions of American dollars, the tons of tightly rationed materials, the countless hours of skilled manpower that go into the construction of each Liberty ship and into the priceless warload she carries.

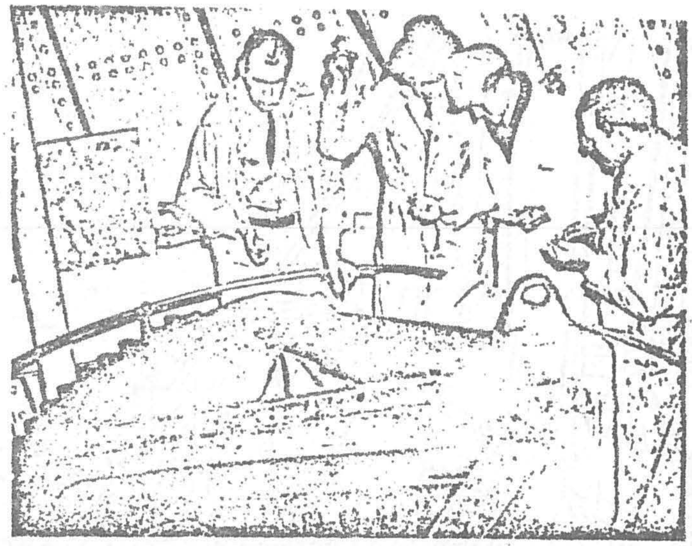
Seaworthiness is never taken for granted. Each ship has her own peculiarities, and often her own little ills. It's the job of the Maritime Commission's trial board—a hand-picked group of naval architects and marine engi-



(RIGHT) TAKING AN INDICATOR CARD FROM A CYLINDER OF THE MAIN ENGINE. (LEFT) FIGURING THE HORSEPOWER FROM THE CARDS

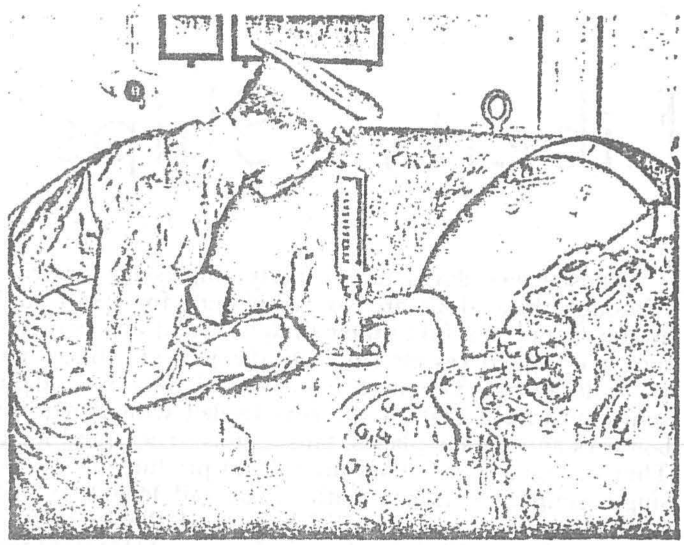


ON THE BRIDGE



TIMING ACTION OF STEERING GEAR

RECORDING SWITCHBOARD DATA



CHECKING TEMPERATURE CONTROL

neers—to put her through her paces, discover those eccentricities, and cure those ills.

The trial board takes the ship out for a two-day sea test with a full crew aboard. They try her over a measured course with her engines wide open. They spin her wheel on a dizzy course, swing her in circles, run her astern at full speed. Meanwhile they inspect every inch of her from forepeak to poop, listening to her purr, testing her fuel consumption, her horsepower, surveying her holds, inspecting her equipment, pipes, wiring, safety devices.

Certain facts must be determined beyond question before she departs with her first warload. Can she withstand the shocks and stresses, the heavy structural strains that come in an emergency when her engines must be suddenly reversed from full speed ahead to full speed astern? Is she easily maneuverable? Otherwise how can she survive in waters infested by enemy submarines and raiders?

When the tests are finished the trial board sits down, tabulates, computes, draws up a performance report and recommends necessary changes.

Once these men have given her a clean bill of health our Liberty ship is ready to move up to dockside, cram her yawning holds full of death for the Axis, and then move seaward to join the procession of new cargo ships which is growing daily into overwhelming proportions.

THROWING MARKERS OVERBOARD IN CRASH STOP TEST

volt direct current. The main switchboard is of the live-front type with panels for the control and protection of the generators and the power and lighting circuits. A battery charging panel is provided for charging the interior communication batteries. The lighting circuits are operated on the 115-volt two-wire system.

All telephones are of the sound powered type. The call bell annunciator is operated on a 20-volt circuit, as is the general alarm system. Duplicate sets of 12-call 24-volt storage batteries are installed for the 20-volt interior communication system. Separate batteries are provided for the radio equipment.

Trials

The Liberty ships are constructed and equipped under the inspection and supervision of representatives of the Maritime Commission. Upon completion they are subjected to exhaustive speed, maneuvering and endurance trials at sea under the direction of the Commission's trial board.

Revised Schedule of War Risk Insurance Rates

The War Shipping Administration announced on March 17 a complete revised schedule of war risk insurance rates covering shipments of cargoes made by American vessels. These rates apply to all quotations made after March 17, but are subject to change without notice.

With respect to shipments of cargoes on voyages other than those named in the following schedule, insurance is not available from the War Shipping Administration as the Administration has determined that rates named by commercial underwriters for such voyages are not unreasonable.

The listing of voyages on which the Administration will provide insurance and the rates follow:

Voyage	Rate, percent
1. United States to and from Africa not east of Capetown	3
2. United States to and from East Africa not beyond Aden	4
3. United States to or from Australia, New Zealand, Tasmania and South Pacific Islands east of 150° east longitude and south of 30° south latitude	5
4. United States and Canada Pacific to and from Hawaiian Islands	1
5. United States Atlantic coastwise shipments, also United States Atlantic to and from United States Gulf	2
6. Shipments between ports in West Indies, including Bahamas, East Coast of Central America, East Coast Mexico, North Coast South America not beyond Paramaribo	2
Except Cuban coastwise voyages	1
7. Havana, South Coast Cuba and East Coast Mexico to and from United States Gulf	1
8. West Indies, East Coast Central America, East Coast Mexico, North Coast South America to and from United States Atlantic	2½
9. West Indies, North Coast South America to and from United States Gulf	2
10. United States Atlantic, West Indies, North Coast South America to and from Pacific Coast, United States, Canada, Mexico, Central America, South America	2½
11. United States Gulf, East Coast Central America, East Coast Mexico to and from Pacific Coast, United States, Canada, Mexico, Central America, South America	2
12. United States Atlantic or Gulf to and from South America Atlantic, south of Paramaribo	3
13. United States Atlantic or Gulf to and from Canada Atlantic and Newfoundland	2¼
14. Voyages confined to Pacific Coast United States or Canada, Mexico and Central America not south of Panama Canal	½
15. Voyages confined to Pacific Coast South America	½
16. Pacific Coast United States or Canada, Central America or Mexico to and from Pacific Coast South America	1
17. Pacific Coast United States or Canada, Central America, Mexico to and from South America Atlantic south of Paramaribo	2½
18. Puget Sound and Canadian Pacific ports to and from ports in Alaska beyond Seward	1
19. Other United States Pacific ports to and from Southeastern Alaska not beyond Cape Spencer	½
To and from Alaska beyond Cape Spencer but not beyond Seward	¾
To and from ports in Alaska beyond Seward	1¼

WPB Order Restricts Sale of Sextants

The War Production Board issued last month an order restricting the sale and importation of sextants. The order, effective immediately, prohibits the sale, delivery or transfer of sextants except to the United States Army or Navy, Maritime Commission, the Panama Canal, Coast and Geodetic Survey, Coast Guard, or to any other department or agency of the United States. Others may purchase a sextant after getting a certificate from the U. S. Coast Guard stating the purchaser is in immediate and legitimate need of the sextant and is entitled to obtain one.

New Shipyard for Building Liberty Ships

Award of a contract for a new shipyard at Panama City, Fla., and the construction of 33 emergency cargo vessels of the Liberty ship type, to the J. A. Jones Construction Company, Inc., of Charlotte, N. C., was announced on April 2 by the Maritime Commission.

The new shipyard, which will have six ways, is the sixth yard to be set up on the Gulf Coast for the construction of Liberty ships. The contract calls for deliveries of vessels to start in January 1943 and extend throughout that year. The new contract makes a total of 1511 Liberty ships which have been ordered since the inception of the first emergency program in March 1941.

Build More Ships Faster to Win the War

(Continued from page 137)

Ten "Must" Commandments

1. Must improve ship operations.
2. Must back up our fighting men.
3. Must keep ships moving.
4. Must amalgamate the pocket-book nerve and the patriotic nerve.
5. Must eliminate loafing.
6. Must stabilize labor-management relationships.
7. Must build more ships faster.
8. Must reduce sinkings.
9. Must increase production.
10. Must make sacrifices.

There is no better conclusion than to repeat the words of the President, our Commander-in-Chief, who said "Our task is hard, our task is unprecedented and the time is short."

<u>Who Was Jeremiah O'Brien?</u>

Captain Jeremiah O'Brien and the Machias Liberty

CAPTAIN JEREMIAH O'BRIEN and a crew of 35 colonial "haymakers" in 1775 presented and won the first challenge by the fledgling American navy to the colossal naval power of Great Britain. This brilliant victory by a Yankee settler represented the first of the soon-to-be-numerous naval victories of the Revolutionary War. The exploits of this sailor-soldier-privateer are, however, little known today. Jeremiah O'Brien of Machias, Maine, captained six privateers at sea between 1775 and 1781, and during his only time ashore, he was the captain of a company of militia defending against British-inspired hostile Indians.

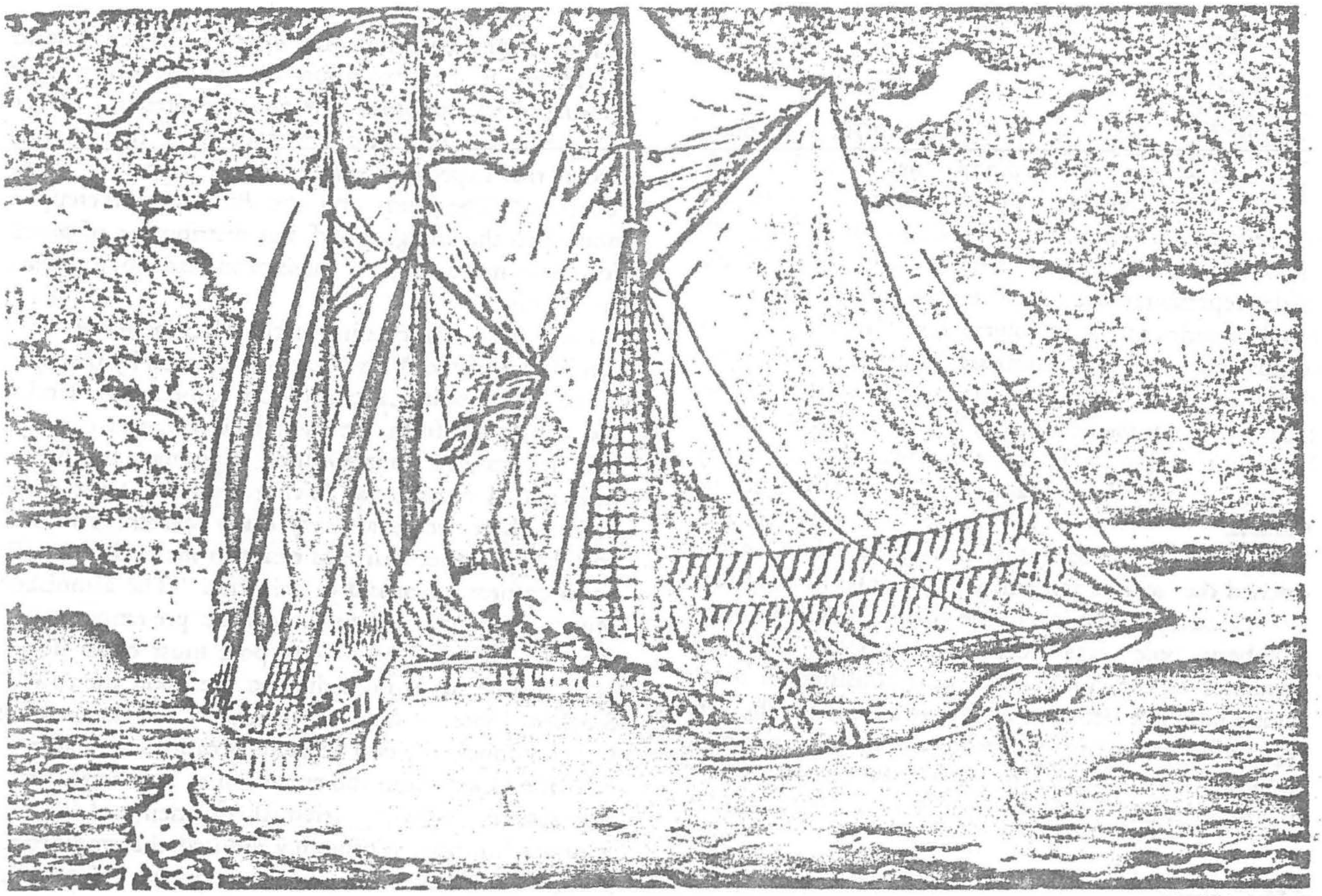
Reports of the battles at Lexington and Concord reached the isolated settlement of Machias in early May 1775. Under the auspices of the village's bolder citizens, a "liberty pole" was erected to symbolize the independence of the colony. The pole consisted of a tall Maine pine tree denuded of foliage except for the very top. After installing the pole prominently on high ground in the village, the townsfolk gathered about it and solemnly pledged themselves to resist British oppression and, if necessary, to sacrifice their property and blood in defense of the settlement.

For over ten years, the residents of Machias had exchanged lumber from the town's mills for provisions brought in by ship. On Friday, 2 June 1775, two sloops of about 80 tons each, the *Unity* and the *Polly*, arrived at Machias from Boston. The cargoes consisted of the household goods of families fleeing Boston and most important, provisions for the inhabitants. Escorting the sloops was the British armed vessel *Margaretta* (100 tons, crew of 40, and four 4-pounders). The following day, 3 June 1775, Captain Ichabod Jones, owner of the *Unity* and the *Polly*, circulated a contract for the townspeople to sign. The contract gave Jones permission to load his ships with lumber for Boston and committed the villagers to protect the ships during the loading. Signing of the contract was made a condition for receipt of the badly needed provisions. At the time, the estimated level of provisions in Machias was adequate for three weeks. The settlers correctly surmised that the type of lumber desired was destined for use by the British army of occupation in Boston and that providing it would give aid and encouragement to the enemy. Accordingly, only a few signed the contract.

Captain Jones arranged a town meeting and submitted his proposal to a vote. Jones expounded that the British had allowed his departure from Boston only on the condition that he would return with cargoes of lumber and that the *Margaretta* had been sent to ensure his proper execution of the condition. The pressing need for provisions and the presence of the *Margaretta*'s guns just a few rods from their homes forced the expedient acceptance of Captain Jones's "contract." The *Unity* and the *Polly* were thereupon moored to the village wharf, but distribution of provisions was made only to those who had not opposed the "contract."

From his vantage point in the Machias River, Captain Moore of the *Margaretta* was taunted by the sight of the liberty pole. Captain Moore subsequently landed and demanded from the assembled villagers that the pole be removed. John O'Brien, a younger brother of Jeremiah, is recorded as having replied, "Must come down! Those words are very easily spoken. You will find, I apprehend, that it is easier to make than it will be to enforce a demand of this kind." The astonished Moore replied, ". . . my orders are pre-emptory and must be obeyed. That liberty pole must come down, or it will be my painful duty to fire upon the town." Stephen Jones, a resident merchant and nephew of Captain Jones, on two separate occasions was able to dissuade Moore from the execution of his threat. Patriotic settlers, including Jeremiah O'Brien and his five younger brothers, thoroughly aroused the smoldering indignation of even the most conservative villagers. In subsequent town meetings, the settlers spontaneously resolved not to allow Captain Jones's sloops to return to Boston.

On Saturday, 10 June 1775, a local conference was held secretly for planning operations against the foe. Surprisingly, the suggestion to capture Jones and the *Margaretta*'s officers while they attended church the following day met with opposition from Morris O'Brien, the 60-year-old father of the O'Briens. Morris O'Brien's reluctance probably stemmed from his understanding of the local situation—scarcity of provisions and the difficulty of obtaining additional supplies, coupled with the defenseless condition of the village. Nonetheless, at a secret meeting the next morning, the stirring oratory of Benjamin Foster moved the group to follow through on the plan to capture the British officers. An advance party of armed villagers attended the Protestant service. (Machias had been chartered by Massachusetts Colony in 1770 with the stipulation that the settlers be Protestant.) Concurrently, another armed party started crossing the river on logs. Unfortunately, the church was so situated that London Atus, the pastor's negro servant, saw the second group of men and assumed that they were British troops bent on attacking the village. With a single bound, London Atus leaped screaming through an open window in the church, and fled into the nearby woods. The ensuing



A party from the sloop Unity *captures HMS* Margaretta *off Machias, Maine in June 1775.*

confusion permitted the alert Captain Moore and his officers to escape from the intended trap. Moore hastily boarded a waiting gig and was rowed to the *Margaretta* and immediately got her underway. After firing a few warning shots over the village and at the settlers pursuing in small boats and canoes, Captain Moore anchored downriver. He then sent back word to Machias that if harm came to Captain Jones or his sloops, the *Margaretta* would return to burn the village.

Flushed with new confidence, the villagers vowed they would capture the *Margaretta*. An armed party set out to the river bank near the British anchorage and upon arrival opened fire with small arms. Fortuitously for the eager Yankees, the *Margaretta* was unable to raise her guns to return the fire, owing to the elevation of the surrounding river bank. In the haste to withdraw further downstream to avoid the harassing fire, the *Margaretta*'s main boom snapped, and she was then seriously crippled. She did, however, manage to withdraw and re-anchor out of gunshot from the settlers.

Early Monday, 12 June 1775, four young men (including Dennis O'Brien) spontaneously agreed to capture the *Unity* then anchored in the river just off the village wharf. The intrepid boarding party rowed out to the *Unity*, took possession without firing a shot, and brought her to the wharf. The enthusiastic "prize crew" drew a crowd at dockside with their cheering. Almost immediately the leaders in the crowd—principally Jeremiah O'Brien—realized the potential that lay at their disposal to capture the *Margaretta*. Arms and ammunition were hurriedly placed on board the *Unity*. Amid the cheers of the town's men, women, and children, the *Unity* sailed, half-laden with lumber, to seek the enemy. The loading and complement of the single-masted vessel consisted of 20 fowling pieces (shotguns) with three rounds of powder and ball each, a small cannon, 30 hay forks, a few axes, a loaf of bread, a few pieces of pork, a barrel of water, and 35 volunteers solicited from the dockside crowd. Among the crew were the six O'Brien brothers. It is curious to note that Morris O'Brien was deterred from joining the "boys" only by their earnest remonstrances.

Captain Moore had witnessed the entire episode through his spy-glass and correctly deduced the intentions of the *Unity* and her crew. Moore got underway

and fell further downriver to Holmes's Bay. As chance would have it, an American schooner out of Norwich, Connecticut, happened to be anchored there. Her main boom was transferred and fitted to the *Margaretta* and her captain, Robert Avery, was impressed as a pilot. Moore then put to sea, a full hour ahead of the *Unity*'s departure.

In her haste to join the enemy in battle, the *Unity* had somehow managed to sail without the benefit of a duly appointed commanding officer. Jeremiah O'Brien was nominated and unanimously elected as captain by the crew. His first official act was to allow three of the crew, who in the cold light of day had decided not to see the adventure to conclusion, to depart for shore in a small boat.

"Now, my brave fellows, having got rid of those white-livered cowards, our first business will be to get alongside of the schooner yonder: and the first man who boards her shall be entitled to the palm of honor," exclaimed the 30-year old skipper. O'Brien next directed that the lumber on board be placed as breastworks to protect the crew from hostile fire.

For reasons that remain forever unknown, the *Margaretta* endeavored to avoid contact with the *Unity*, and when first sighted was headed for sea. To increase his speed, O'Brien cast off the small boats from his stern. The *Unity* was apparently a better sailer, as she steadily reduced the distance of an hour's headstart by her opponent. Once within hailing distance, Moore demanded that O'Brien keep off, and threatened to fire. O'Brien replied, "In America's name, I demand you surrender!" The *Margaretta* then opened fire with a stern swivel gun and killed two of the *Unity*'s crew, McNeil and Coolbroth. A backwoods moosehunter by the name of Knight manned the small gun and picked off the *Margaretta*'s helmsman with a ball through the head. This rapidly cleared the enemy's quarterdeck leaving the *Margaretta* not under command. She broached under the *Unity*'s bow and the latter's bowsprit caught the mainsail of her opponent and caused the two vessels to be held together. At this juncture, John O'Brien sprang to the *Margaretta*'s deck only to see the vessels part, leaving him alone and stranded in the enemy's camp. A bayonet charge, however, convinced John O'Brien that he should abandon his precarious post for the relative safety of the sea. In a hail of balls, he swam the intervening 30 yards to the *Unity*. After retrieving and congratulating his brother for setting foot on the foe's deck, Jeremiah O'Brien maneuvered the *Unity* alongside the foe and lashed the two ships together through the efforts of a team of Yankee sailors.

Captain Moore bravely rallied his men and personally threw hand grenades on the deck of the American ship. Recognizing that Jeremiah O'Brien was the motive force behind the bold attack, Moore directed the fire and grenades at the audacious skipper. Fortunately, O'Brien remained unscratched, and ironically Captain Moore was felled by two shots from a Yankee marksman who had witnessed the personal attempt on O'Brien's life.

"To your feet lads! The schooner is ours! Follow me! Board!" Twenty men, previously selected and armed with pitchforks, clambered over the rails. After nearly an hour of battle including hand-to-hand, the leaderless and frightened British crew surrendered. Captain O'Brien personally hauled down the British ensign in triumph.

Subsequent to her exultant return to Machias, the *Unity* was fitted out as an armed cruiser with the captured weapons from the *Margaretta*. Her name was changed by O'Brien to the *Machias Liberty*, and she was employed by the settlement as the first American armed cruiser of the Revolution.

The chronicle of O'Brien and his ship could have well stopped here and been complete; however, fate was to bring new contact with the foe in exactly one month. The British sent out the armed cruiser *Diligent* and her tender *Tapnaquish* from Halifax, Nova Scotia, ". . . to bring the obstreperous Irish Yankee in for trial." On 12 July 1775, acting in concert with Benjamin Foster (in an East Machias schooner), Jeremiah O'Brien in the *Machias Liberty* captured both the *Diligent* and the *Tapnaquish* off Machias.

JEREMIAH O'BRIEN (Maclay Manuscript)

After sending word to the inhabitants that he would burn the town if they persisted in their hostile demonstrations, Lt. Moore dropped the MARGARETTA below the Narrows. Notwithstanding his threat the Americans seized the sloop UNITY and forty of the men of Machias went aboard her, while another party took the second sloop and brought her up to the wharf. "On examing their equipments of warfare, only twenty guns could be produced, many of which were mere fowling pieces, carrying scatter shot, and of powder, ball, and shot there were no more than three rounds to each firearm. The remaining weapons consisted of thirteen pitch-forks, a few scythes, and ten or twelve axes." The MARGARETTA was armed with four 3-pounders and fourteen swivels. Only two of the Machias men had ever seen military service; they were Morris O'Brien and Benjamin Foster, both of whom had served in the expedition against Louisburg. Morris was now incapacitated by extreme age. Jeremiah O'Brien, then thirty-one years old, a son of Morris O'Brien, was chosen commander of the UNITY, and Edmund Stevens was made his lieutenant.

While this had been going on a number of the inhabitants had gathered on the highland overlooking the MARGARETTA'S refuge near the Narrows, and threatened to attack if she did not surrender. Receiving for answer "fire and be damneed," they opened fire, which Moore returned, but finding himself at a disadvantage again got under way, and, running into a bay, anchored near the confluence of two streams. Here he lashed the MARGARETTA alongside a small sloop commanded by a Mr. Toby, whom Moore compelled to come aboard the Crown cutter and act as pilot.

It was not until Monday morning, June 12th, that the patriots were ready to make sail in pursuit, when the UNITY, followed by the second lumber craft having twenty men under the command of Benjamin Foster aboard, got under way. Observing the approach of the Americans, Moore weighed anchor and maneuvered so as to avoid a collion. In this effort his vessel lost her boom and gaff, whereupon he ran into Holmes Bay, and, taking a spar and all the provisions, together with

Robert Avery, of Norwich, Connecticut, out of a craft he met coming in from the Bay of Fundy, repaired his injury.

While this work was going on the Americans again drew near, and to avoid them Moore stood out to sea. "During the chase our people built their breastworks (bulwarks) of pine boards, and anything they could find in the vessels that would screen them from the enemy's fire." Finding that the Americans were not only following him, but were rapidly gaining, Lieutenant Moore cut away his boats, and as this did not enable him to hold his distance he, when "at the entrance of our harbor," began firing, one of his shots killing an American. This fire was answered by one of the volunteers named Knight, who discharged his "wall piece"--a musket too heavy to fire offhand, needing the support of a "wall," but in this instance probably the "breastwork" or or bulwark--killing the English helmsman, an impressed seaman, and clearing the poop of men. The two craft quickly came together, when a sharp fire of small arms was opened. Moore made a gallant defense, throwing personally a number of hand grenades and with great effect, until he was shot through the breast with a brace of musket balls. The unfortunate Mr. Avery also was killed. A British midshipman named Stillingfleet became terrified and secreted himself below.

The Americans now boarded and soon obtained possession of the cutter, the action having lasted "for near the space of an hour." The first man to board was John O'Brien, brother of Jeremiah, and the second was Joseph Getchell. On the part of the Americans one was killed and six were wounded, one of the latter afterward dying. The enemy had four men killed and about ten wounded, one mortally, her commander, who died in the village the next day. For this brilliant affair the Colonial Council, then in session at Cambridge, tendered Jeremiah O'Brien a vote of thanks and gave him the custody of his prizes. The MARGARETTA was brought back to port and her armament transferred to the UNITY. "We purpose" wrote," wrote the Machias Committee of Safety, "to convey the prisoners to Pownalborough Gaol as soon as possible."

There has been confusion in some accounts of this affair as to which O'Brien commanded the UNITY. Inquiring of Miss Annetta O'Brien Walker, a descendant of Morris O'Brien, the author learns that it unquestionably was Jeremiah who had the honor. The confusion very naturally arises from the fact that there were six O'Briens in the fight, three of them having the letter "J" as their initial. As many of the early records give only the first letter, "J," to the commander, doubt easily arose as to which O'Brien was intended. The six brothers were Jeremiah, Gideon, Joseph, Dennis, John, and William. Their father, Morris, came from Dublin, Ireland, in 1740, and settled in Scarboro, then in Massachusetts. About 1760 the family moved to Machias on account of the facilities there offered in the lumber business. They built and owned sawmills. The gunboat MACHIAS, of our present navy, was named for the town where the fight took place.

The news of this fight greatly enraged British navy officials, and about a month later they sent two armed sloops, the DILIGENCE and the TAPANAGOUCHE, or TAPUAQUISH, from Halifax to punish the audacious Yankees. These sloops carried eight guns and fifty men for the first and sixteen swivels for the last. Hearing of their approach, O'Brien sailed from Machias with the UNITY and the coasting vessel PORTLAND PACKET, commanded by Benjamin Foster, to anticipate them. They met July 12, 1775, in the Bay of Fundy, and by attacking them separately the Americans took both and brought them in triumph to Watertown. For this truly brilliant affair O'Brien was made a captain in the Massachusetts State marine, and with his last two prizes, which he named MACHIAS LIBERTY and DILIGENCE, he went out to cruise after British transports, O'Brien commanding the MACHIAS LIBERTY and a Mr. Lambert the DILIGENCE. Under their new commanders these vessels were highly successful. On August 9, 1775, they recaptured a schooner that had fallen into the hands of the enemy, and also a cutter and two barges, with thirty-five men, under the command of a lieutenant of the British sloop of war FALCON, that were

operating in Gloucester Bay. In this capture the Americans had one man killed and two wounded.

These maritime successes so exasperated Admiral Graves, then commander on the North American station, that he sent out a squadron of four war vessels under Captain Mowatt to "overawe" the colonists. Mowatt destroyed the town of Falmouth, Maine (now Portland), in October, compelling many women and children to seek cover in hastily constructed huts at the beginning of the severe northern winter. Among these children was Edward Preble, then only fourteen years old. Later in life he became famous as a captain in our navy. The MACHIAS LIBERTY and DILIGENCE continued to cruise off the New England coast for a year and a half, when they were laid up. Captain O'Brien afterward entered the privateer service, commanding the armed ships LITTLE VINCENT, CYRUS, and TIGER, of New Hampshire. Late in September, 1777, he captured off Cape Negro a vessel from Ireland laden with pork for the British army. This craft had been taken by an American privateer, was recaptured by the British cruiser SCARBOROUGH, and was again seized by Captain O'Brien.

Later in the war Jeremiah, with his brother John and several others, built at Newburyport a ship called the HANNIBAL, carrying twenty guns and a complement of one hundred and thirty men. On her first cruise, to Port au Prince, she was commanded by John O'Brien. Returning from this voyage with several prizes, the HANNIBAL was under the command of Jeremiah O'Brien. Meeting with varied succes in a cruise of considerable length the HANNIBAL, in 1780, was captured, after a chase of forty-eight hours, by two British frigates which were escorting a fleet of merchantmen in the vicinity of New York. Captain O'Brien and his men were taken into that port and were confined in the ill-famed prison ship JERSEY, where they were subjected to great hardship. After six months of imprisonment the HANNIBAL'S crew was exchanged, with the exception of Captain O'Brien, who it seems, by orders from England, was reserved for the special malice of the British Government. He was transported to England and thrown into Mill Prison, and made the object of personal ill treatment.

Notwithstanding the careful watch kept on him, O'Brien managed to effect his escape. The story of this exploit, as told by his brother John, is as follows: "He purposely neglected his dress and whole personal appearance for a month. The afternoon before making his escape he shaved and dressed in decent clothes, so as to alter very much his personal appearance, and walked out with the other prisoners in the jail yard. Having secreted himself under a platform in the yard, and thus escaping the notice of the keepers at the evening round-up, he was left out of the cells after they were locked for the night. He escaped from the yard by passing through the principal keeper's house in the dusk of evening. Although he made a little stay in the barroom of the house, he was not detected, being taken for a British soldier. In company with a Captain Lyon and another American who also had escaped from the prison and were concealed somewhere in the vicinity, he crossed the English Channel to France in a boat and thence came to America," just about the time hostilities ceased. He lived to see the second war with Great Britain, but at that time was too old to become an active participant. One of our new torpedo boats is named O'BRIEN in honor of Jeremiah O'Brien.

--A History of American Privateers
Edgar S. Maclay
1899

NAMING THE LIBERTY SHIP JEREMIAH O'BRIEN

IN NAMING Liberty ships, the Maritime Commission used several broad guidelines: the person being honored had to be famous or heroic—and dead.

Only one person lived to see his namesake. Francis O'Gara, a former sportswriter for the Philadelphia Inquirer, was purser on the Jean Nicolet when it was sent to the bottom in 1944 by a Japanese submarine. Since he was believed dead, it was decided to honor his memory by naming a Liberty after him. The Francis J. O'Gara was delivered in June 1945, about four months before O'Gara was discovered very much alive in a prison camp. He had been picked up by the submarine.

Liberties were named for such famous women as Virginia Dare, Julia Ward Howe and Pocahontas; and such obscure ones as Mary Cullom Kimbro, the first woman merchant mariner to be killed at sea during WWII.

Men honored included Thomas Jefferson, Billy Sunday, F. Scott Fitzgerald and Carl Zachary Webb, a wiper who died while serving on a tanker. Even the mythical were not forgotten: one Liberty was named Paul Bunyan.

Jeremiah O'Brien was neither myth nor widely famous, but heroic he was.

A Dublin native, he had been in this country about 15 years when at age 31 he was confronted with a temptation few Irishmen could resist—to defend America by fighting England. Not that the people of Machias, Maine, O'Brien's town, were sure America was at war with England.

It was June 1775 and the British ships Polly and Unity, accompanied by the armed schooner Margaretta arrived at Machias to trade provisions for lumber. Rumors had preceded the ships that fighting had broken out at Lexington and when Lieutenant Moore of the Royal Navy raised the subject of cargo protection he confirmed all in the minds of Machias residents.

Up went a Liberty Pole in the village center and the British were informed the deal was off.

Moore moved the Margaretta up and trained its four-pounders on the village: the deal was on again.

But the people of Machias balked at taking down the Liberty Pole, to the great displeasure of Captain Jones, commander of the three ships. He threatened to fire on the town but was persuaded to allow the residents to discuss the matter. Discussion quickly turned to plotting.

On Sunday, June 11, Jones and Moore, unaware how deep feelings were running in the town, attended a church service. Moore happened to gaze out of a window and saw a group of armed men sneaking up on the ships. At that moment another group of armed men burst into the church.

Moore leaped through the window, raced to the Margaretta, discouraged the attackers by firing a one-pound cannon over their heads and moved the ship out into the bay to escape small arms fire.

Captain Jones escaped to the woods and hid. The Machias men seized the Polly and Unity and, emboldened by success, set out in them next day to capture the Margaretta. Jeremiah O'Brien commanded the Unity.

The Margaretta, having had mast trouble, was only an hour ahead of its pursuers and was a slow ship. Moore made ready to fight.

The Unity, poorly armed, closed to be met by fire from a rear swivel gun that killed two. A marksman on the Unity put a bullet through the head of the Margaretta's helmsman, the ships locked, separated, then O'Brien brought the Unity in and locked again.

An hour's battle ensued during which Moore was felled. In the end O'Brien hauled down the Margaretta's ensign.

Americans were jubilant; they had won the first naval battle of the Revolutionary War. The Colonial Council, meeting at Cambridge, awarded O'Brien the prizes. Anticipating posterity, O'Brien renamed the Unity the Machias Liberty and increased her armament.

The British were furious and sent two armed sloops to punish the Machias malcontents. They should have stayed in port. O'Brien and Benjamin Foster, who commanded a second vessel, met them in the Bay of Fundy on 12 July 1775 and captured both.

Encouraged by all this—and who wouldn't be—O'Brien and his brother John turned privateers and for three years disrupted British shipping until they encountered two of His Majesty's frigates which proved their match.

The crew was released in six months but O'Brien was sent to Mill Prison in England. Shortly he escaped, crossed the English Channel with two other Americans and returned home just as the war was ending.

A brave man and an intelligent fighter who never gave up fighting. The Jeremiah O'Brien is honored by his name.

Bradford Letter

4100.4

34 Cornelia Ave
Mill Valley
Ca 94941
January 19, '78

Dear Mr. Patterson:

A friend of mine in Oakland sent me a clipping from the Tribune of January 8th telling about the "Jeremiah O'Brien".

I thought the enclosed information might interest you. It so happens I am the great great grand-daughter of Gideon O'Brien, Jeremiah's brother. And I am also I think (85 yrs old) the oldest living descendant of said O'Briens.

About a year and a half ago, I went to Pascagoula Mississippi and christened a Destroyer O'Brien DD975 and about six weeks ago, on December 3rd, I returned to Pascagoula, to be there for

the commissioning of the "O'Brien" -
There have been four other
destroyers named for Jeremiah O'B.
This one is a beautiful ship and
quite the newest in all ways.
It is a Spruance type I believe -
I have been told, the story
of the Jeremiah O'Brien has
recently been on television.
I am so sorry I missed it.
I am quite fascinated that
of all the Liberty ships it
was this one that has
survived, a true O'Brien!

Sincerely
Elizabeth B. Bradford

P.S. The story is that during the war
of 1812 when British troops tried to
take Machias that Col. O'Brien old and
frail dared to brandish in the face of
his captors, the sword which he had
long ago drawn in behalf of American
Independence!"

EBB.

Enclosure to Bradford Letter

The first Naval engagement of the American Revolution was fought and won by a courageous group of citizens of Machias, Maine on June 12, 1775 -- less than two months after the battles of Lexington and Concord, and five days before Bunker Hill. These battles marked America's first armed resistance to Britain in the War for Independence.

On that June day, a band of irate farmers and loggers, aroused by the visit of a British warship to their quiet harbor, armed only with muskets, swords, and axes, elected Jeremiah O'Brien their captain, and set out to oppose the intruder. The warship, the MARGATETTA, had served as an escort for a pair of merchantmen sent from Boston by General Gage, the British Commander there, to bring back Maine lumber, much needed for Boston's defenses against the threatened attack of the colonists.

Captain O'Brien comandeered the sloop UNITY, one of the merchant ships, ran down and boarded the MARGATETTA in Machias Bay. After a short, but furious fight, which resulted in several dead and wounded on both sides, and the mortal wounding of the MARGARETTA'S captain, the British crew surrendered. The MARGARETTA became America's first Naval prize of war.

Following the Battle of the MARGARETTA Jeremiah became known as Col. O'Brien. In mid-July of the same year the MACHIAS LIBERTY, commanded by O'Brien, and the FALMOUTH PACKET, under Capt. Benjamin Foster, captured the VILIGENCE, another British vessel. Jeremiah O'Brien was the captain of a privateer during most of the Revolution and, according to one account, was taken prisoner and confined in England, but managed to escape.

<u>World War II Voyages</u>

Post War Voyages

Restoration of the Ship

World War II Ugly Duckling Comes Home

Liberty Ship Jeremiah O'Brien rescued from mothball fleet.

For 33 years the SS *Jeremiah O'Brien* marked time in the muddy waters of the mothball fleet, its paint peeling, its history forgotten and its future as predictable as the rust on its bulkheads. Like hundreds of other Liberty Ships before it, the *Jeremiah O'Brien* would be sold for scrap.

After all, there was nothing about this particular ship that was remarkable. It was just one of 2,750 Liberty Ships churned out of the shipyards that sprang up like boomtowns as World War II first threatened, then engulfed the United States. Like the Model A Ford, these emergency freighters were mass produced, the largest group of ships in history ever stamped out from one design. The *Jeremiah O'Brien*, like the others, had served as a slow but dependable workhorse of the war, unceremoniously but conscientiously ferrying supplies to our British and Russian allies and later, troops, to the Normandy invasion and the South Pacific.

But time had made something special of the *Jeremiah O'Brien*. Time had turned it into a survivor. Unlike the other Liberty Ships that after the war had been transformed into anything from hospital ships to coal carriers, from tramp steamers plying the obscure coastlines of the world to sunken reefs for the fish, the *O'Brien* had never been modified. Thirty-seven years after its launching, the ship still sported the same rounded hull and familiar three masts, the flush deck and five hatches, the same old-fashioned lines that had inspired President Franklin Delano Roosevelt to fondly call the Liberties "ugly ducklings."

Now, something else is special about the *Jeremiah O'Brien*. It has been saved.

During the past year, hundreds of volunteers have swarmed over the long-empty decks picking up debris, scraping, painting, cleaning and restoring. Last October they sailed the *Jeremiah O'Brien* under

its own steam from the Suisun Bay Maritime Administration National Defense Reserve Fleet, 40 miles north of San Francisco, to the Bethlehem shipyards in San Francisco Bay. There, in drydock, three decades of marine growth were stripped from the hull. The sandblasting and painting of the decks goes on and the guns that once graced the bow and stern will be replaced. This May 21, the *Jeremiah O'Brien* will sail once more, this time to the Golden Gate National Recreation Area at Fort Mason, where the ship will become a floating museum. As the National Liberty Ship Memorial, she will serve as a monument to those who built and sailed the Liberty Ships, to the Merchant Marine and to the maritime industry, which was instrumental in saving her.

In 1962 Capt. Thomas J. Patterson, Jr., now Western Regional Director of the Maritime Administration, was sent to San Francisco as a marine surveyor. He was to inspect and evaluate the seaworthiness of the 300 Liberty Ships at anchor in three West Coast reserve fleets. Patterson was advised that the ships were to be sold for scrap.

But the *Jeremiah O'Brien* caught Patterson's eye. "She was in very superior condition," he recalls. "She had been built in one of the best shipyards and operated by one of the best operators."

In the debris-cluttered interior, Patterson found all the original furniture, doors and linoleum table tops still in place—not even scored by the usual initials of men bored at sea. In the chart room, wartime maps plotted one of the ship's last missions to the Pacific. On a bulkhead hung yellowing wartime messages from the Navy, and on the forward gun tub was Miss Jerry O'Brien, a red-headed Irish lass in a bikini, fondly painted by the ship's last crew over the background of a four-leaf clover.

Grace Line, Inc., one of 80 steamship companies that sailed the Liberties under contract during the war, had operated the *Jeremiah O'Brien* and had been scheduled to turn the ship over to the Army in November 1946 for conversion to a hospital ship. But the conversion was never made and that year the *Jeremiah O'Brien's* last crew sailed her into Suisun Bay and dropped anchor.

"She had been kept completely original," says Patterson. "She was just like she'd come out of the builder's yard. She'd never been used for anything other than what she was designed to do—carry supplies to our forces—and she'd been kept in one piece.

"I decided that we could hold onto her until the end. At least we would have one ship," Patterson says. "But the years slipped by and the ships got fewer. Washington said 'we can't hold her indefinitely, we don't have a mission in historical preservation.'"

Patterson had a warm spot in his heart for Liberty Ships. His first ship as a deck cadet in July 1943 was a Liberty, one of the more than 40 that have now been scuttled to form artificial reefs in tropical waters to lure the fish for sport fishing. He later skippered a Navy Liberty.

With encouragement and assistance from the National Trust's Maritime Preservation Office, Patterson began to talk to people in the maritime industry about saving the *O'Brien*. In 1977 a group of them formed a nonprofit corporation called the National Lib-

erty Ship Memorial. The advisory board read like a who's who of the maritime industry—people who headed steamship companies, shipyards and unions. One of their first successes was to win the ship a spot in the National Register of Historic Places. Another was a $10,000 Maritime Preservation Grant from the National Trust to begin restoring the woodwork.

Much of that first restoration work was donated by Robert Blake, president of General Engineering and Machine Works in San Francisco, one of many who has given hours of his own time as well as paying his employees to work on the restoration.

"People who are interested in ships are kind of crazy," Blake says. "It was a fun project. At lunchtime we'd all sit on deck and tell lies to each other, spin yarns. It was a labor of love."

Blake himself served first as a cadet, later as chief engineer on the Liberties, which usually sailed with crews of 40 men plus a naval gun crew of 10 to 20. Voyages would last as long as three to six months. He was torpedoed and went down in the Arabian Sea aboard a Liberty in 1944—one of 195 Liberty Ships lost during the war—drifting in a life raft until rescued by a Norwegian freighter.

Still, Blake insists, "You felt safer on them than on others. You could practically run them with your eyes closed. I think they're beautiful. I've always wanted to own one, to buy one."

Capt. Ernest Murdock, chief of the Maritime Safety Division of the 12th Coast Guard District, attributes his attachment to Liberty Ships to survival. "When you get home safely on a ship you tend to think of it warmly," he says with a laugh. "I got home safely." Murdock has spent weekends in the *O'Brien*'s engine rooms, fixing leaking pipes, replacing old gaskets, raising head after head of steam in the old boilers to loosen the preservative that had coated the inside for three decades. John Pottinger, superintendent at the Suisun Reserve Fleet, was instrumental in keeping the old ship intact over the years.

The Liberty Ships were born out of desperation. In 1940 with German bombers devastating their cities and U-boats from fallen France picking off English ships, the British commissioned the building of 60 freighters in the United States. By early the next year, President Roosevelt, with his eye on Europe, where German subs and surface ships were sinking more than 500,000 tons of Allied shipping each month in the North Atlantic alone, ordered a drastic speed-up in American shipbuilding. The U.S. Maritime Commission, to save time, chose the basic English design—itself based on a ship from 1879—substituting oil for coal. The result was a simple, mass-produced freighter capable of carrying 9,146 tons of cargo plus fuel—the Liberty Ship—first launched on September 27, 1941. Along with the Liberty Ships was born the image of a new shipyard worker: Rosie the Riveter, who worked alongside the men to insure success of the war effort.

Using prefabrication and substituting welding for some riveting, shipyard workers turned out the vessels in record time. SS *Robert Peary*, built at the Richmond, Calif., shipyard took seven days, 14 hours and 23 minutes from hull to delivery. A few of them literally fell apart at the seams. The Liberty Ships were a vital sea link helping to keep the landlocked Russian armies supplied and fighting. They braved the Murmansk run, which cost 97 Liberty Ships and countless men in the icy waters and stormy seas of the North Atlantic.

Jeremiah O'Brien was built in about six weeks and launched June 19, 1943, by the New England Shipbuilding Company in South Portland, Me. The ship was named for a Revolutionary War hero who had seized two British ships to launch a surprise attack and win the first naval battle of that war in 1775.

Thomas R. McGeehan, a transportation consultant in Mountain

Top, Pa., was a cadet midshipman aboard the *O'Brien* in 1944, when the ship took part in the Normandy invasion. "We knew the invasion was imminent but we didn't know exactly when it would take place," he recalled. In May they sailed to Scotland where the crew practiced gas mask drills, assuming the Germans would use poison gas. Hugging the English coast, the *O'Brien* sailed back to Southampton where it loaded assault troops and equipment.

McGeehan remembers the air of excitement and 2,000 battle-hardened veterans of campaigns in Sicily and Italy aboard, for he was 19 years old. "We arrived at Omaha Beach and discharged our troops into landing craft. We were probably a quarter of a mile off the beach. There was shore fire, a lot of 88 fire. They were pretty clever with their fire," he says.

Like the other Liberties, the *Jeremiah O'Brien* floated an inflated balloon astern on a steel cable, meant to discourage enemy planes from diving Kamikaze-like on the unloading ships.

The final voyages of the war for the *Jeremiah O'Brien* took place in the Pacific, where John Crosby served as third officer while the ship shuttled bombs from Texas to the Philippines and then went on to New Guinea.

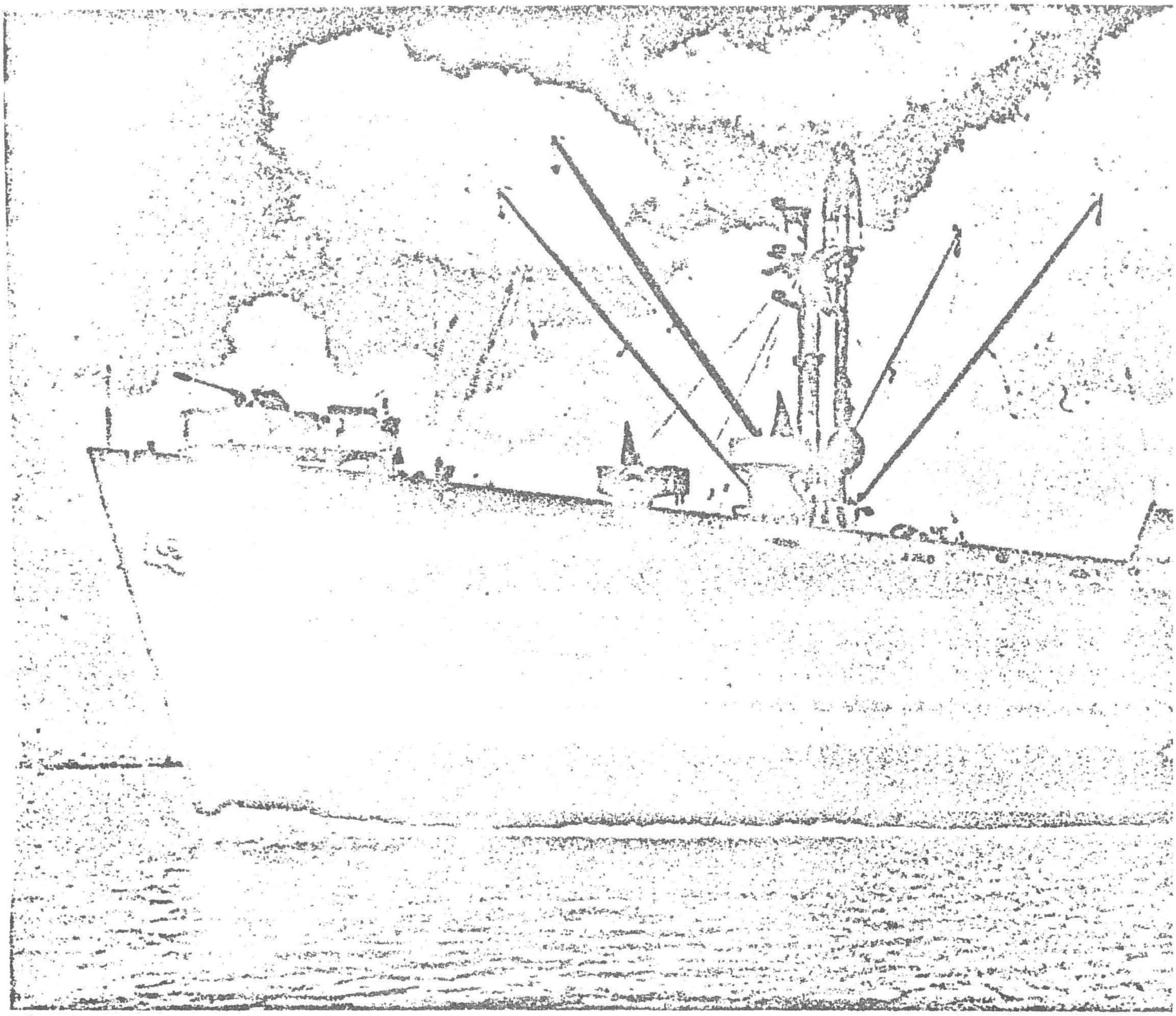
Crosby, a New Orleans building contractor, challenges the label "ugly ducklings." "I really resent it because I don't think they were ugly. I think it was a pretty ship, especially when it was new. We thought they were good, stable ships. Hell, that's all we knew." In October, he and his wife came to San Francisco to be aboard the *Jeremiah O'Brien* as its engines came back to life once more.

That single day, says Captain Patterson, was the culmination of 385 man-days of volunteer effort. The ship could still make its design speed of 10½ to 11 knots. "To take a ship that's been idle for 33 years, eight months and revive it with volunteers and load 503 people on it and steam 40 miles was in keeping with the spirit of the Liberty Ship," Patterson says. "She was built in six weeks and here she's lasted for 37 years."

With what Patterson estimates are only four or five hulls of Liberties left in American mothball fleets (the Soviet Union is still operating Liberty Ships it obtained under Lend-Lease), the future of the *Jeremiah O'Brien*, at least, is secure. The 1979 Maritime Heritage Grants Program, developed by the National Trust and the Heritage Conservation and Recreation Service, gave the National Liberty Ship Memorial a $436,532 grant and the maritime industry has committed $623,000 in money and services. The Grace Foundation gave $15,000. The money is nearly enough to finish the exterior restoration work at the Bethlehem shipyard in time to allow topside tours in May.

Barney Evans, executive director of the Liberty Ship Memorial, says the work will go on down below, costing an estimated $5 million to construct the museum itself in the five holds. The exhibits will depict the era of the Liberty Ships, their construction, the life of the seamen, the operation of the steamship companies and the history of the maritime unions.

Once a year, the Liberty Ship Memorial hopes to crank up the *Jeremiah O'Brien* and sail around the bay to conduct a seamen's memorial service. "Many gallant people in the United States who lost their lives going to sea on the Liberties should be remembered. Those that built and loaded the Liberties should be remembered," Patterson says. "It's a fleet of ships the world will never see again. The *Jeremiah O'Brien* was there and did its job and survived the ravages of war and time. I think she'll outlast us all." HP



Last Of The Gallant Liberties

By Don McCormack

The largest group of ships in history to be constructed from one design, the Liberty ship, famous for its gallant WWII history, has been reduced to a miniature mothball fleet.

ABOUT 30 MILES northeast of San Francisco, in the muddy waters of Suisun Bay, there rests at anchor a forgotten ship with an unusual claim to fame. Debris litters its decks, fixtures have been stripped, paint peels from gun mounts in grotesque curls, rust spots gaze from the faded grey bulkhead.

The ship appears a prime candidate for the scrapper's torch, and it is, except a buyer has not been found. Of individual fame, it possesses probably none. Sketchy government reports reveal it was built by the New England Ship Building Corporation, Portland, Maine, and launched in June 1943. It carried dry cargoes such as ammunition and grain on United Kingdom routes and to the Continent. In November 1946 it was turned over by the Grace Lines to the Army for conversion into a hospital ship. Whatever happened, it was not converted and since 1946 has lain in Suisun Bay, an obscure member of a weathered mothball fleet.

The ship is a Liberty named the *Jeremiah O'Brien*. Of the more than 2,500 Liberties built during World War II, only 21 remain in the American merchant fleet, the Department of Commerce reports, and these include the mothball ships. A few dozen more may be chugging along the backwaters of the world; no one really knows. Unlike most Liberty ships, the *O'Brien* has never been altered. And therein lies its fame: it may be the only "true" survivor of the most popular ship in history.

Popular in the sense of numbers, the Liberty was the largest group of ships in history constructed from one design. To seamen its rounded hull and three masts became as familiar as warmed-over coffee and as distinctive as the Golden Gate Bridge. A Liberty

simply could not be mistaken for another ship.

Now ships are not built in these numbers unless they are popular in the other sense: important people liked them, thought they had great merit. Nonetheless, the Liberty, often undeservedly, suffered a bad press.

Franklin Roosevelt looked at the design and dubbed the ship the "ugly duckling." On D-day, the Allies sunk several to form a breakwater; they were expendable. The engines were obsolete before they left the yard. To the men who sailed them as they crept along at 11 knots through submarine-ruled waters, they must have seemed stationary bull's-eyes. Many would argue the boredom was the worst aspect. Voyages often lasted over a year and the ports of call—Eniwetok, Saipan, Guadalcanal, Murmansk, the Persian Gulf—by contrast made ship life appealing.

Yet for all the abuse heaped on the Liberties, there remains with many of the men who sailed them a good deal of respect for their virtues and capabilities. "They were dependable, rugged. They would get there," said John Pottinger, who sailed on Liberties during and after World War II. Pottinger is superintendent of the Suisun Bay mothball fleet. He and a number of others would like to see the *Jeremiah O'Brien* berthed in the San Francisco Maritime Museum but chances appear slim.

Harlan Sotem, curator of the museum, has a soft spot for Liberties; he is an ex-merchant marine officer and has sailed on many. But he pointed out that space was limited at the museum and that money was lacking to restore a Liberty and fit it for display. He also doubts the museum directors would accept a Liberty. "We would like something say closer to the War of 1812."

SS ROBERT E. PEARY from hull to delivery took seven days, 14 hours and 23 minutes, a world record for ships of this tonnage that still stands. The ship, which weighed 10,420 tons, was built at the Richmond shipyard and delivered on 15 November 1942.

Sotem's lack of enthusiasm is understandable. The Liberty is incapable of arousing emotions, exciting interest, the way a wooded frigate or a battleship can. It is an ordinary cargo ship, respected and no doubt disliked by many who sailed them,, loved by a few. Its virtues are often obscured because they drew much of their luster from the times, and the passing of years has diminished them. The English would perhaps best remember and appreciate the ship.

In September 1940 a British delegation was searching the United States for a firm to build 60 freighters, and

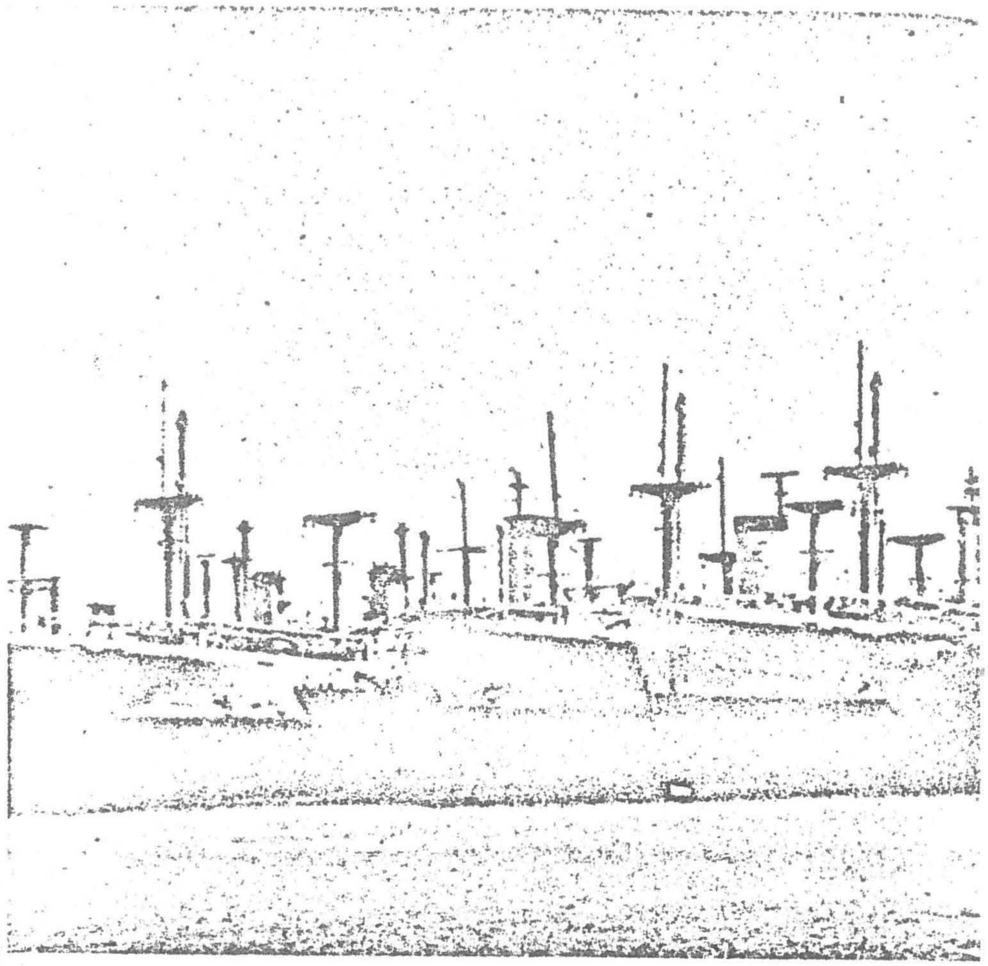
found shipyards swamped with work. England was desperate. Denmark, Norway and France had fallen and the Nazis were assembling landing craft on the French coast. German bombers had just begun their missions over English cities; whole sections of London were being pulverized. U-boats, formerly hedged by minefields that forced them to go north around the British Isles to get to sea, were now sailing from France. English shipping losses rose sharply.

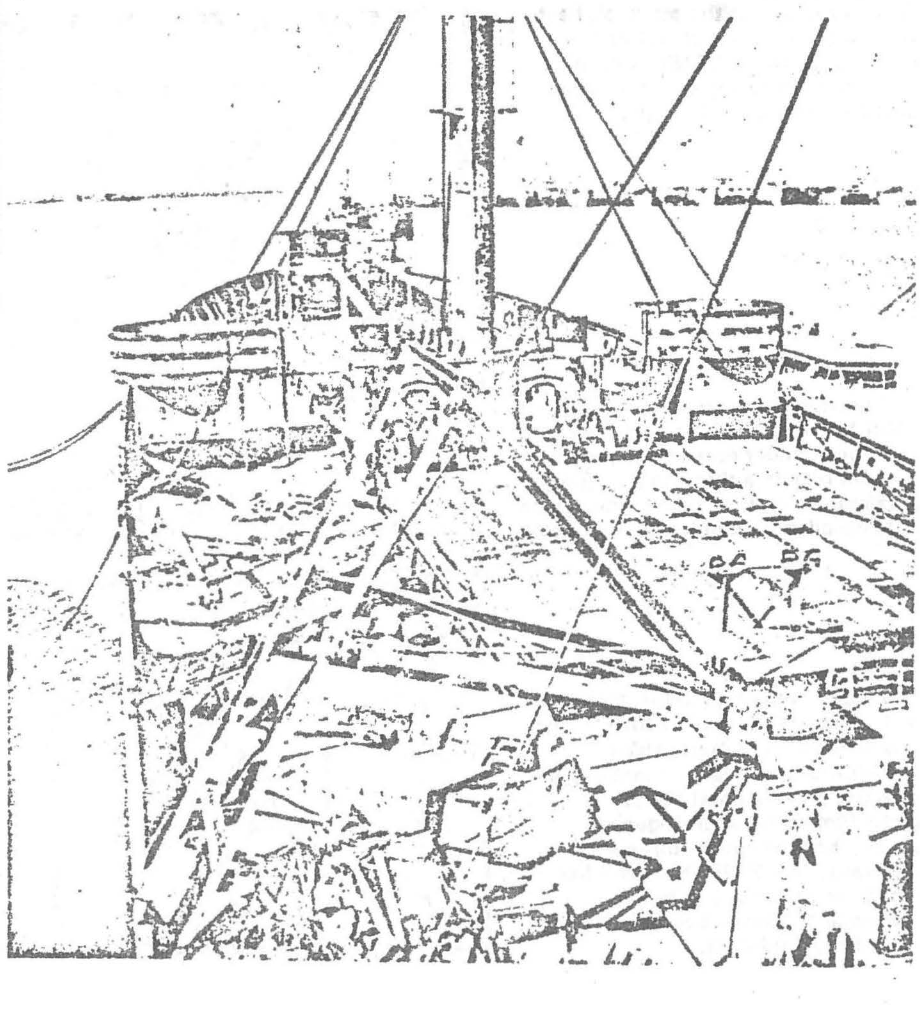
The delegation finally met pudgy, bullet-headed Henry J. Kaiser, former photographer, former salesman, successful contractor. Kaiser had built roads, had built bridges and dams, had laid pipe. He said he could build ships. Probably with many misgivings, the British awarded the contract to the Kaiser combine. A shipyard was gouged out of the mudflats of Richmond, California, for 30 new ships; the remainder were to be built at Portland, Maine.

Those 60 ships later came to be known as American-built British Liberties, but in late 1940 the term Liberty ship had not yet been coined. In early 1941, Roosevelt, alarmed over shipping losses in the North Atlantic, decided to step up the American ship building program. Priority was given to constructing freighters that could be mass produced, built quickly and operated easily. Influenced by the British choice of design, lacking time to do extensive research, the Maritime Commission settled basically for the same ship, with the exception that oil was substituted for coal and the deckhouse was left intact instead of split.

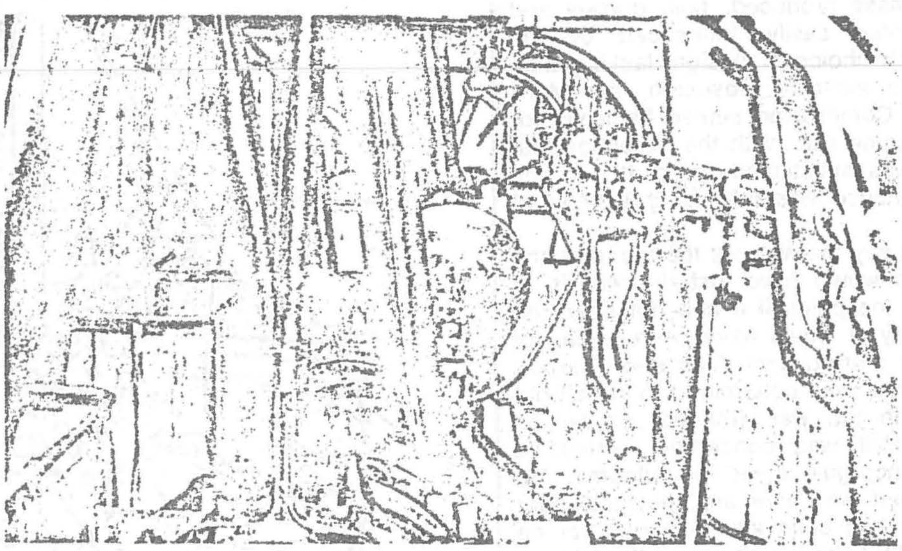
To say that without the Liberties the Allies would have lost the war is to miss the point. If it had not been the Liberty, it would have been a ship of some other design. After Pearl Harbor, America was determined to go all-out to win the war. (Indeed, as far as Churchill was concerned, America's entrance guaranteed the outcome. "So we had won after all," he said, after Hitler had obligingly declared war on the U.S.) But the choice of the Liberty, although controversial at the time, was ultimately a happy one.

During World War I, America had amazed the maritime world by mass producing ships. It was now to amaze it again by the ingenuity and speed with which it turned out Liberties. Men and women flocked to factories and shipyards; work on prefabrication and assembly went on round the clock. As experience began to tell, production time was cut from about seven months to three months, then to about one month, often to weeks.

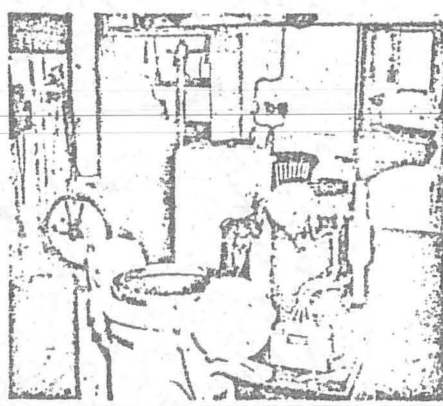




The faded grey line of the mothball fleet. Many of these ships are slated to be scrapped soon. The O'BRIEN, with the characteristic round hull of the Liberty, is located second from the right.

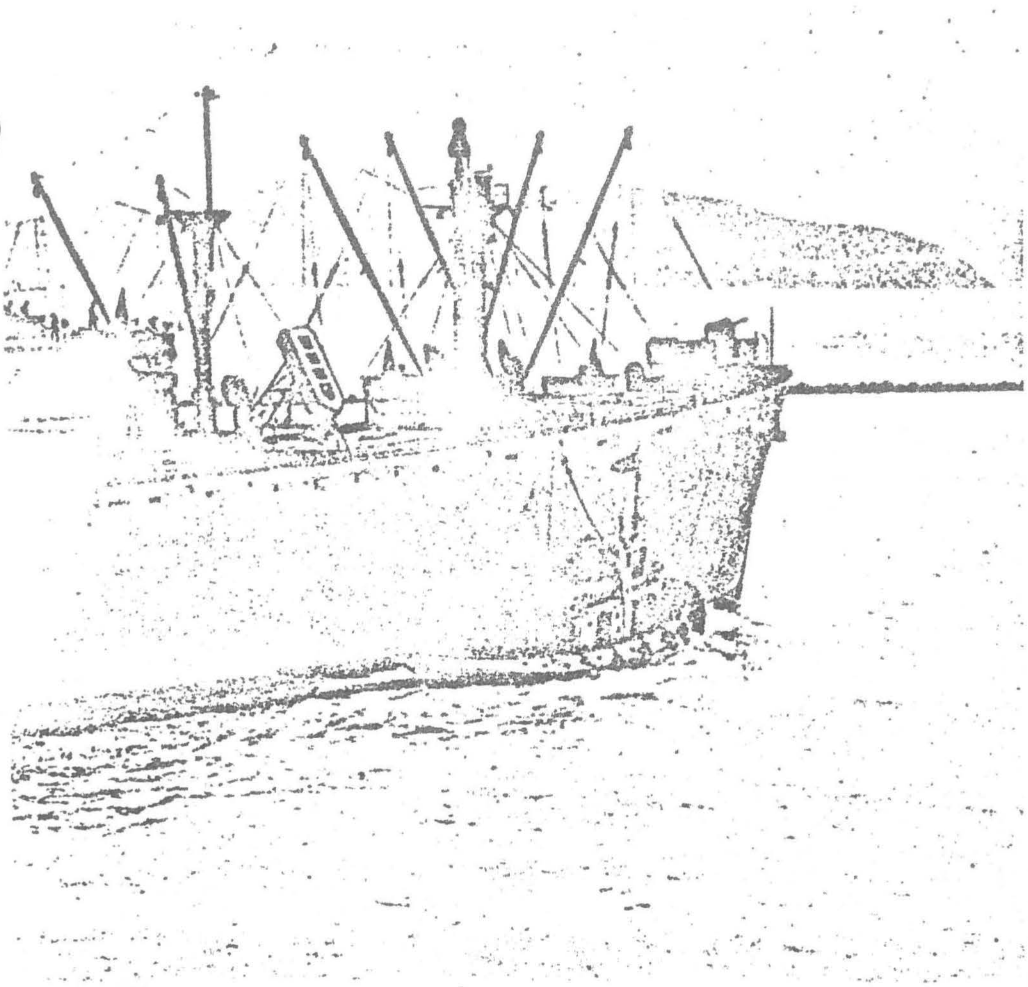


The expansion steam engine of the O'BRIEN, old but reliable. The shafts of the three-cylinder engine are protected from rust by a thick coat of grease. Maximum speed for the engine, which had to be oiled by hand, was 11.5 knots.



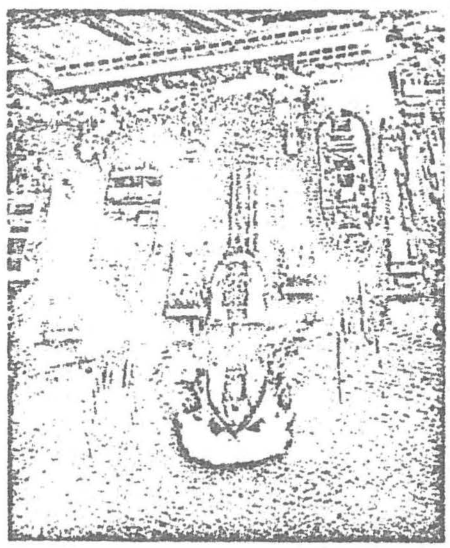
A simple bridge for an uncomplicated ship, the Liberty. All engines on the JEREMIAH O'BRIEN have been stopped since 1946.

Debris, mostly from other ships, litters the deck of the JEREMIAH O'BRIEN, one of the last remaining Liberty ships. The O'BRIEN used to carry a three-inch gun forward, a five-inch at the stern, and eight 20mm anti-aircraft guns. The Liberty had five holds, three of them forward. The O'BRIEN, which has never been remodeled, has been berthed since 1946 in the mothball fleet at Suisun Bay, California.



The last Liberty ship launched on the Pacific Coast was the BENJAMIN WARNER. It was delivered on 14 July 1944, with the keel laid 13 June, one month and one day earlier.

An assembly line view of Liberty construction. A large crowd is gathered at the Kaiser yard at Portland, Oregon, in September of 1941 to launch a Liberty (center). Other ships are in various stages of construction. Detailed work—fitting masts, installing guns—was done after launching.



Hull #171, the STAR OF OREGON, was launched on 27 September 1941. The keel was laid on 19 May and the ship was delivered within the year, slow when compared to later construction of Liberties.

Electrical lines snake across a newly laid keel to welders busily joining steel plates. Pickup crews lessened the chance of accidents.

The Richmond yard set the record with the *Robert E. Peary*: from hull to launching, four days and 15 hours; from hull to delivery, seven days and 14 hours.

So many Liberties were built and so quickly that at war's end conflicting claims were advanced as to the exact number. The American Bureau of Shipping put the total of Emergency Cargo 2 (EC-2) hulls, the standard Liberty hull, at 2,742 including 2,580 freighters, the 60 British Liberties, and EC-2 ships modified to carry tanks, planes, oil or coal. The Maritime Commission put its official total at 2,751.

Each regular freighter being a carbon of the other, the Liberty soon came to symbolize American power and know-how. Because they were everywhere and so successful, the Liberties were taken for granted—except perhaps by the English who knew full well the vulnerability of their isle to a blockade.

In choosing the Liberty design and steam power, the Maritime Commission paid tribute to the old and the obsolete. The ship was modeled along the lines of a British tramp, the basic design of which had been laid down in 1879. The expanding steam engine, capable of 11.5 knots, was inferior to the diesel and steam turbine but fighting ships had priority on these engines and they took longer to build. England and Russia could not wait.

Despite its drawbacks, the Liberty soon proved itself a workhorse. The standard Liberty was 441 feet, six inches long, had a beam of 56 feet, five holds and could carry 9,146 tons of cargo plus its fuel. Although prone to buck during rough weather, overall it was a steady, rugged vessel. Many times another 1,000 tons—trucks, crated planes, tanks—were lashed topside, giving the ship the capacity of over 300 freight cars.

It was a simple ship, an easily understood ship, from its three-cylinder engine, which was hand oiled, to its wooden refrigerator with large pipes lining the walls. It had to be simple, for many of the men who sailed them knew little about the sea, and most officers had little command experience. Pottinger recalls voyages where most of the crew consisted of teenagers out for adventure, many of them only 15 years old. Oilers moved up to engineers, engineers to mates, and mates to masters. There were just too many ships and too few men with experience.

The men generally performed admirably but the Liberties came in for a good deal of criticism. Welding had been substituted for riveting and many seamen doubted the new ships could

withstand severe strain. Several Liberties did literally come apart at the seams but steps were taken quickly to correct production flaws. In the course of the war, 195 Liberties were lost to bombs, torpedoes, mines, structural defects, collisions, accidental explosions and other hazards common to war and the sea.

Bureaucrats might point out that the few extra knots other cargo ships commanded did them little good against submarines and planes but that was scant comfort to men who had to brave the Murmansk gauntlet at 11 knots, often much less if the weather was rough. The Liberty mounted a three-inch gun forward, a five-inch at the stern and eight 20mm anti-aircraft guns. Gun crews sometimes shot down an enemy plane but for the most part Liberties depended upon murky weather and escort ships and planes for protection. In the early war years, escort ships were in short supply with the result that casualties were high. Convoy PQ 17 left Iceland on 28 June 1942 for Murmansk with 33 ships but only 11 made it.

Then there were the quarters. The ship's complement was about 44 men but to this was added a naval gun crew of 10 to 20 men, sometimes more. Fist fights occasionally broke out between the better paid seamen and the sailors who after all were taking the same risks. The ship's crew was berthed at the stable center; the naval crew toward the stern, which in foul weather bucked and tossed when the propeller came out of the water. Ventilation was poor. In the tropics the Liberty was almost unbearable, Pottinger said. Officers had private rooms but crewmen were squeezed two or three to a compartment. Pottinger says he had seen them six to a room.

Despite this, Pottinger believes complaints about ship conditions should be taken with a grain of salt. "Many of the kids were from poor homes and had never had anything. To them the Liberty was an improvement." Sotem adds that the Liberty compared quite well with other ships. "At first they were great, better than anything I sailed on before."

Perhaps it was the combination of war tension, crowdedness and boredom that made the Liberty voyage so trying. Pottinger made voyages of 10 months, six months, 13 months and nine months and once spent two months berthed at Eniwetok. Another time, his ship followed the Second Marine Division, carrying its gear from island to island.

Places like Murmansk or a Pacific atoll offered frustrated seamen little chance to let off steam. "Before the

NAMING THE LIBERTY SHIP JEREMIAH O'BRIEN

IN NAMING Liberty ships, the Maritime Commission used several broad guidelines: the person being honored had to be famous or heroic—and dead.

Only one person lived to see his namesake. Francis O'Gara, a former sportswriter for the Philadelphia *Inquirer*, was purser on the **Jean Nicolet** when it was sent to the bottom in 1944 by a Japanese submarine. Since he was believed dead, it was decided to honor his memory by naming a Liberty after him. The **Francis J. O'Gara** was delivered in June 1945, about four months before O'Gara was discovered very much alive in a prison camp. He had been picked up by the submarine.

Liberties were named for such famous women as Virginia Dare, Julia Ward Howe and Pocahontas; and such obscure ones as Mary Cullom Kimbro, the first woman merchant mariner to be killed at sea during WWII.

Men honored included Thomas Jefferson, Billy Sunday, F. Scott Fitzgerald and Carl Zachary Webb, a wiper who died while serving on a tanker. Even the mythical were not forgotten; one Liberty was named Paul Bunyan.

Jeremiah O'Brien was neither myth nor widely famous, but heroic he was.

A Dublin native, he had been in this country about 15 years when at age 31 he was confronted with a temptation few Irishmen could resist—to defend America by fighting England. Not that the people of Machias, Maine, O'Brien's town, were sure America was at war with England.

It was June 1775 and the British ships **Polly** and **Unity**, accompanied by the armed schooner **Margaretta** arrived at Machias to trade provisions for lumber. Rumors had preceded the ships that fighting had broken out at Lexington and when Lieutenant Moore of the Royal Navy raised the subject of cargo protection he confirmed all in the minds of Machias residents.

Up went a Liberty Pole in the village center and the British were informed the deal was off.

Moore moved the **Margaretta** up and trained its four-pounders on the village; the deal was on again.

But the people of Machias balked at taking down the Liberty Pole, to the great displeasure of Captain Jones, commander of the three ships. He threatened to fire on the town but was persuaded to allow the residents to discuss the matter. Discussion quickly turned to plotting.

On Sunday, June 11, Jones and Moore, unaware how deep feelings were running in the town, attended a church service. Moore happened to gaze out of a window and saw a group of armed men sneaking up on the ships. At that moment another group of armed men burst into the church.

Moore leaped through the window, raced to the **Margaretta**, discouraged the attackers by firing a one-pound cannon over their heads and moved the ship out into the bay to escape small arms fire.

Captain Jones escaped to the woods and hid. The Machias men seized the **Polly** and **Unity** and, emboldened by success, set out in them next day to capture the **Margaretta**. Jeremiah O'Brien commanded the **Unity**.

The **Margaretta**, having had mast trouble, was only an hour ahead of its pursuers and was a slow ship. Moore made ready to fight.

The **Unity**, poorly armed, closed to be met by fire from a rear swivel gun that killed two. A marksman on the **Unity** put a bullet through the head of the **Margaretta's** helmsman, the ships locked, separated, then O'Brien brought the **Unity** in and locked again.

An hour's battle ensued during which Moore was felled. In the end O'Brien hauled down the **Margaretta's** ensign.

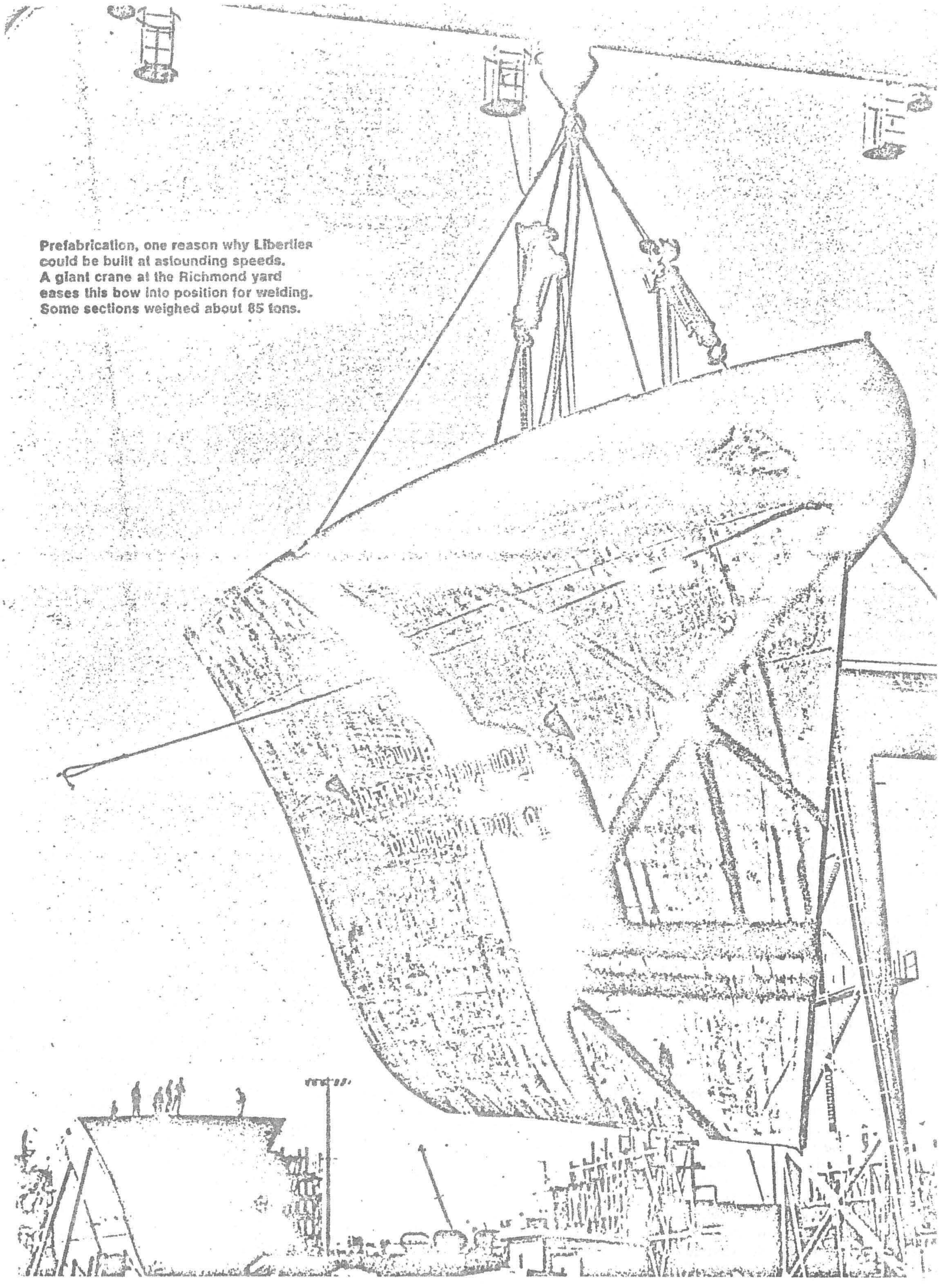
Americans were jubilant; they had won the first naval battle of the Revolutionary War. The Colonial Council, meeting at Cambridge, awarded O'Brien the prizes. Anticipating posterity, O'Brien renamed the **Unity** the **Machias Liberty** and increased her armament.

The British were furious and sent two armed sloops to punish the Machias malcontents. They should have stayed in port. O'Brien and Benjamin Foster, who commanded a second vessel, met them in the Bay of Fundy on 12 July 1775 and captured both.

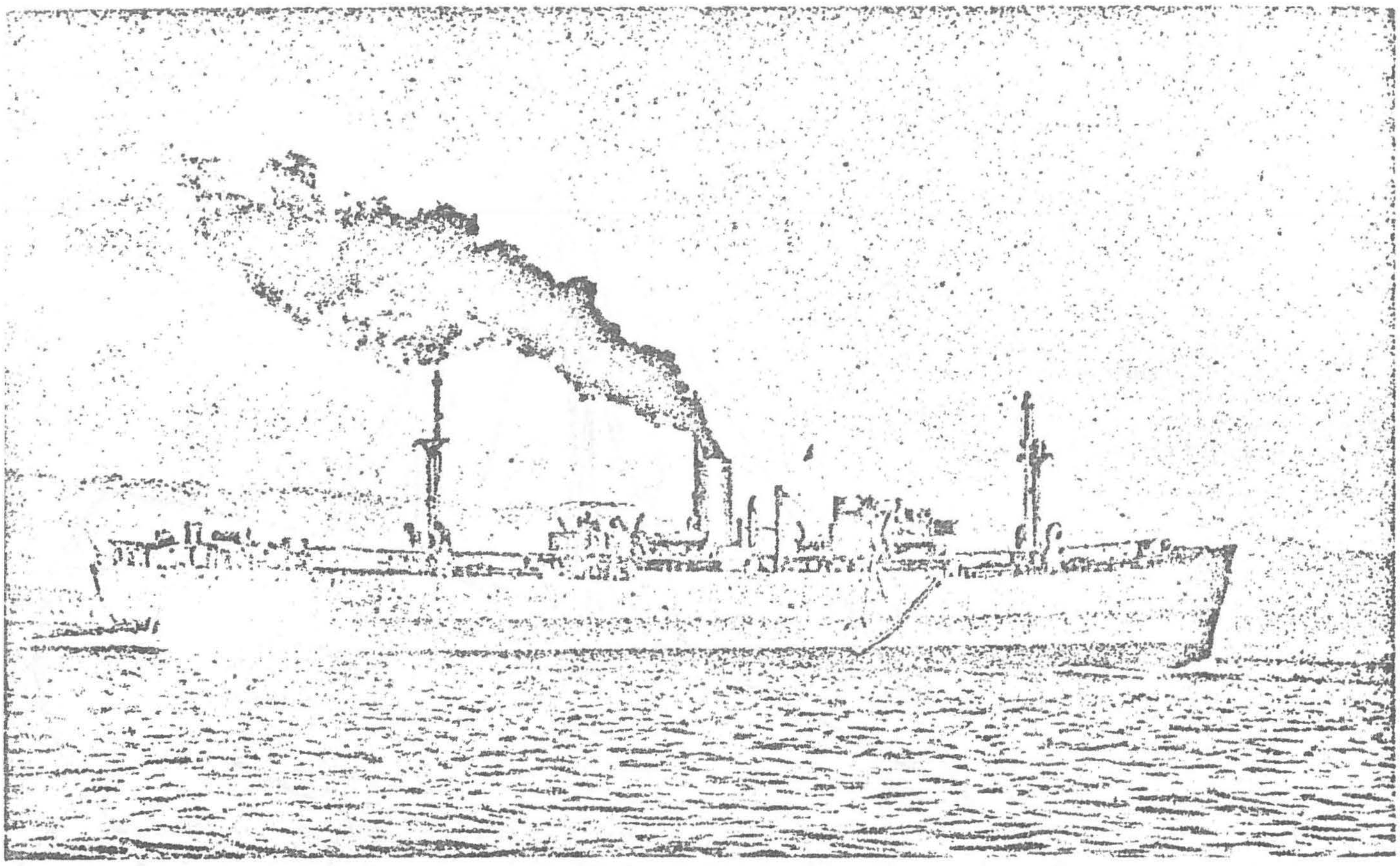
Encouraged by all this—and who wouldn't be—O'Brien and his brother John turned privateers and for three years disrupted British shipping until they encountered two of His Majesty's frigates which proved their match.

The crew was released in six months but O'Brien was sent to Mill Prison in England. Shortly he escaped, crossed the English Channel with two other Americans and returned home just as the war was ending.

A brave man and an intelligent fighter who never gave up fighting. The **Jeremiah O'Brien** is honored by his name. ⚓



Prefabrication, one reason why Liberties could be built at astounding speeds. A giant crane at the Richmond yard eases this bow into position for welding. Some sections weighed about 85 tons.



The SS OCEAN VANGUARD was the first Ocean class vessel built in America for the British Technical Merchant Shipbuilding Mission. Note the split deckhouse on this British Liberty in contrast to the single structures on the BENJAMIN WARNER and the ROBERT E. PEARY. The British Liberties also burned coal. This ship was powered with a reciprocating engine and was welded, except that the frame was riveted to the shell. Hull #1 in Shipway 3, the VANGUARD started construction on 14 January 1941 and was delivered 27 October of the same year.

war we used to go to someplace fairly interesting to a more interesting place, but during the war we went nowhere," Pottinger said.

Battle action, in these circumstances, might be seen as relief—unless your ship went down. Many times the first a crew knew it was being stalked by a submarine was when torpedoes slammed into the ship. Those lucky to reach lifeboats sometimes spent weeks at sea before reaching land or being rescued. Food and water were rationed in small portions, limbs swelled for want of proper nourishment, the wounded died, morale would approach the breaking point, prayer would become popular, then one day someone would sing out those magic words, "There's a plane! I think we have been sighted!" or "Land!"

Less fortunate were those who never had a chance to abandon ship. The *Paul Hamilton*, on her fifth voyage, was hit by German bombers. The ship was carrying high explosives and troops, 498 men in all. When the smoke cleared, the ship had disappeared.

In many instances however, crews were able to abandon ship with little loss in life, and on several occasions, gave the enemy something to think about. The *Stephen Hopkins*, in a bloody engagement in the South Atlantic, destroyed a German raider before she herself was sunk. Of the entire ship and naval crew, only 15 survived. The *Stephen Hopkins* was later named one of the gallant ships of World War II.

At war's end another fear was dispelled, that Liberties were so slow and obsolete they would be of little use in peacetime service. "The developed countries had been knocked flat in the war," Pottinger explained. "It took a number of years to get more modern ships going. Besides, the Liberty's efficiency was not bad for those days."

France, England and Greece rushed to buy surplus ships, many of them Liberties. American shippers purchased 130 Liberties before 1951. Fortunes were made in the boom times following the war. The Korean War and the Suez crisis later raised the demand for Liberties.

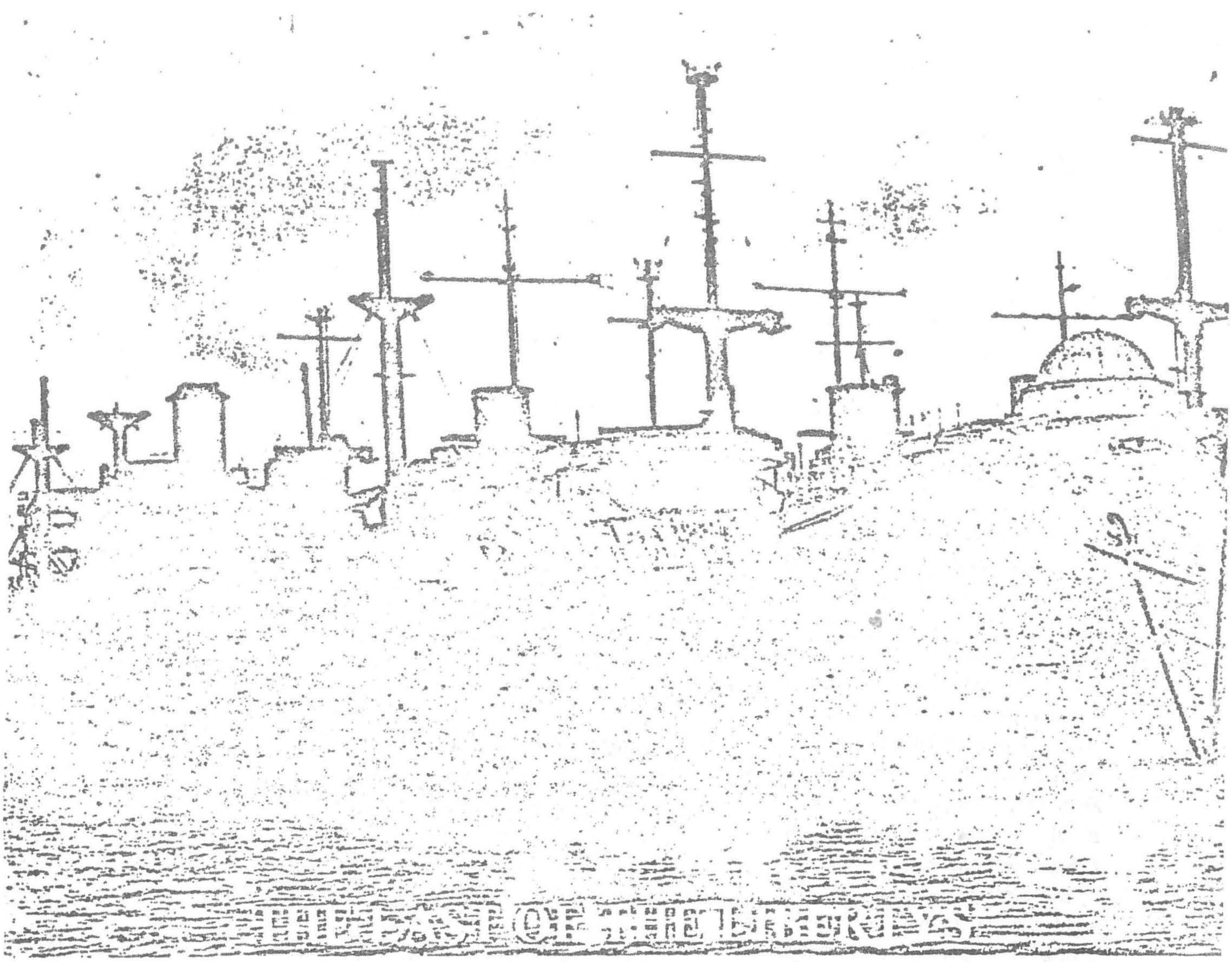
In peace as in war, the Liberty then remained a familiar sight in world trade, to be found in almost every major port. Most of them had been strengthened or remodeled in some manner; the Liberty lent itself well to tinkering.

The real end came in the late Fifties and early Sixties when old age began to take its toll. Welds cracked, engines broke down, scrapping became cheaper than repairing. Insurers administered the *coup de grace* in 1966 when they levied a 37½ percent surcharge on the insured cargo in war-built ships. Those that escaped the scrapper met their end in other ways —sea coffins to dispose of old ammunition or germ warfare material, fishing reefs, one as a target for naval missiles.

Admiral Emory Scott Land, who more than anyone else was responsible for the Liberty, predicted its fate in 1943 when he said, "It is produced to be expendable, if necessary."

The *Jeremiah O'Brien* will probably end up "expendable." Few countries have monuments to honor the faithful, hardworking drudge; and that essentially was the Liberty. It was built for work, not for glory. Five other Liberties, all remodeled, are also in the Suisun fleet. Government agencies have expressed interest in sinking them for fishing reefs.

Conceivably the *O'Brien* will one day wind up on the ocean floor, a spawning place to cluster fish for the fisherman's hook. It might not be a bad end. The ship would be doing what the Liberty was always meant to do—work. ⚓



A Story of the Greatest Shipbuilding Effort in History

by Hal Rubin

Somewhere in the Indian Ocean or the South China Sea a few rusty Liberty ships may still be creaking along. But as far as the U.S. Maritime Commission knows, it owns the last of the huge fleet of Liberty ships that played a major role in overcoming the Axis powers during World War II.

Efforts are now under way to move the last of the Libertys, the S.S. Jeremiah O'Brien, from its anchorage with the National Defense Reserve Fleet (Mothball Fleet) in Suisun Bay, California, to the nearby Golden Gate National Park in San Francisco. Plans are to convert the O'Brien into a museum to commemorate the largest merchant ship building program in history, when 2751 Liberty ships were launched between 1941 and 1945.

When the nation found itself in dire need of freighters to carry men and materiel to an imminent war, the United States in 1941 focused its productive genius on an old and reliable British tramp freighter of 1879 vintage. By following the British design closely, the builders made the American Liberty ships easily adaptable to operation by British crews and to emergency repairs in virtually any port in the world. The main attributes of the ship were minimum cost, rapidity of construction, and simplicity of operation.

During the search for the right design, President Franklin D. Roosevelt, a former Secretary of the Navy, saw the Liberty ship plans and was impressed with the proposed variation on a British design. As he studied the drawings he said the resulting ship would be "a real ugly duckling." That characterization stayed with the Liberty fleet throughout the war.

Although it was no beauty, it was sturdy and dependable. The ship had

an overall length of 441 feet 6 inches, a beam of 57 feet, a depth of 37 feet 4 inches, a total displacement of 14,000 tons, and a gross tonnage of 7176 tons. It was designed to carry 9146 tons of cargo with a full load of fuel. Of the single-screw, full-scantling type, with raked stem and cruiser stern, the hull was subdivided by seven main bulkheads providing five cargo holds. The main propelling machinery consisted of a triple expansion, steam reciprocating engine that developed 2500 IHP at 76 RPM.

Central Location

Engines and boilers were located amid ships in a single compartment. The cargo gear was designed for simplicity of operation to meet handling problems likely to be encountered in foreign ports. Steam driven winches were used throughout. Normal complement was 44 officers and crew, but frequently there was an additional naval gun crew of about 20, making the quarters cramped.

Most of the Liberty ships were all-welded rather than rivetted, which was a new idea. But the welding locked a lot of stress into the hull and many of the ships developed cracks under heavy use. The situation was later remedied by using rivetted bands to reinforce the hull The Jeremiah O'Brien is unique in that it was never fitted with rivetted bands.

The Launching of the Program

In 1941, shortly before Pearl Harbor, when it became obvious that the U.S. was being drawn inevitably into the war, the nation began an emergency ship construction effort. Immediately after Pearl Harbor the program for merchant ships was stepped up seven fold, calling for the construction of 2300 vessels totalling 23 million deadweight tons in 1942 and 1943. About 1500 of these ships were to be cargo vessels known as Liberty ships. The others were to be tankers and cargo vessels of special Maritime Commission design.

To accomplish the herculean task, the program borrowed mass production techniques developed by the automotive industry. More than 500 large and small manufacturing plants in 32 states were called upon to manufacture ships' parts.

The Maritime Commission collected everything at a central pool and consigned parts to the yards as required. Sixty shipyards on the Atlantic, Pacific and Gulf Coasts and the Great Lakes did the assembly work and launchings. In order to build this huge fleet at top speed without interfering with the government's long-range naval ship building program, the Maritime Commission started *18 new shipyards* having 171 shipways.

The first Liberty, the S.S. Patrick Henry, was launched in Baltimore, Maryland, on September 27, 1941. Within a year Liberty ships were being completed from keel to delivery in *3½ months*, compared with 10 to 12 months for a cargo ship during the first World War. By 1943, the program was delivering three completed vessels per day. Howard L. Vickery, vice chairman of the U.S. Maritime Commission at the time, said the effort was successful because they were able to ensure (1) prompt availability of materials, principally steel, (2) an adequate supply of skilled labor, and

(3) high productivity of the work force. To facilitate the construction and delivery, the Maritime Commission established four complete regional offices in San Francisco, New Orleans, Chicago, and Baltimore.

Limey Libertys

Thirty Libertys were built by a Kaiser yard in Richmond, California. These had a slightly different, classic British profile and were called "Limey Libertys." Additional Libertys for the British were built in Canada. The British version was readily identifiable because the names were *Ocean* Voice, *Ocean* Vanguard, etc.

In service the Liberty proved to be highly versatile. Some were used as troop transports and (later) as hospital ships; some carried cargo only, and others carried both men and materiel. Some were modified to transport only coal, aircraft, or oil. The great bulk saw duty only as cargo carriers because of their 10 knot speed. John Pottinger, who is the superintendent of the Suisun Bay Mothball Fleet, did extensive duty on Liberty ships during and after WW II. He said, "The Liberty ship was not really a very good ship to use in the convoy, because for one thing, it had no tachometer. The more sophisticated ships, of course, did, so that the officer could call down to the engineers and tell them how many revolutions he wanted. It wouldn't do any good to tell that to a Liberty ship engineer, because he didn't know how many he was giving you anyway. All they had was a revolution counter."

The Operational Liberty

A typical convoy of Liberty ships that carried a mix of troops and materiel took 30 days to sail from the East Coast port of embarkation to Naples. Because of their slow speed, and even when protected by destroyers, the libertys were very vulnerable in the Atlantic and the Pacific. German and Japanese aircraft sunk their share of the "ugly ducklings". To German submariners who torpedoed them, they were known as "Kaiser's Creeping Coffins" because the Henry J. Kaiser industrial empire was a major builder of the freighters.

Inevitably the perilous crossings generated grim anecdotes about the Libertys. When the submarine net at the Straits of Gibralter was raised to let in a large convoy of Libertys, some

German subs also sneaked in and began to play havoc with the tail enders. With his ship hit and sinking, a Liberty captain radioed the convoy commander for instructions.

The commander's terse response was: "Africa. Turn right."

In the mid-Atlantic in February of 1944, a convoy was holding an emergency drill for the troops aboard. One of the Liberty ships carried a contingent of B-17 heavy bomber crewmen destined for the 15th Air Force in Italy, together with a full load of aerial bombs and other munitions. A bomber co-pilot asked the ship's captain to brief him about the use of the life jacket in case they were torpedoed.

"Forget the jacket," the ship's captain instructed him. "Wear your parachute."

Estimates are that more than 200 Libertys did not survive the war, but not all of them were lost to enemy action. Bad weather and accidents also took their toll.

Generally the ships were named after people, like the Jeremiah O'Brien, a Naval figure, or Andrew Furuseth, leader of a seaman's union. Some of the names were more obscure, like the John Hathorn, Lambert Cadwalader, or William Cushing. So many ships were built it was eventually necessary to choose rather far-fetched names—like the S.S. Stage Door Canteen, in honor of a New York club for servicemen.

The Post War Story

During WW II, many of the O'Brien's sister ships were assigned to our allies under the Lend-Lease program. A major recipient was Russia. Eventually, and very reluctantly, the Russians returned them but in totally stripped condition. Cargo gear, everything that could be pulled loose, had been removed. After the war, under the Marshall Plan, Libertys were given to nations desperate for cargo carriers. For the next 20 years these ships continued to be the backbone of the world's tramp fleet.

Many of these Libertys were cut in half and stretched another 60 to 80 feet to provide more cargo space. The lengthening enabled a better wave pattern, increasing the speed. With the passing years many Libertys were cut up for scrap, but dwindling numbers continued to carry cargo for American and foreign lines until about 1970. The Navy used Libertys for its missile tracking program, radar picket duty, and as repair ships. Some of the remaining ships were deliberately sunk to create artificial reefs to improve fishing in the Atlantic, Gulf, and Pacific.

When the Mothball Fleet was installed at Suisun Bay near Benicia, California, in 1946, the Libertys were well represented. These saw use as emergency storage space for bumper grain crops in the 1950's. During subsequent emergencies, Maritime reserve ships were drafted back into action before being returned to mothballs again. Liberty's like the O'Brien saw service during the Korean War. Later they participated in Operation Handshake—the transportation of grain to the Orient. During the shutdown of the Suez Canal, when a frantic call went out for additional shipping, the Libertys made their final important contribution to the nation's well being.

By 1967, the Maritime Commission had a fleet of Victory ships that replaced the smaller and slower Libertys. Today's Mothball Fleet in Suisan Bay has 54 Victorys but only one Liberty, the O'Brien.

About 40 workers maintain the fleet in mothballs, repainting the ships every three years and making constant inspections. The underwater portions of the ships are protected by graphite anodes, preventing any electrolytic ac-

tion that would reduce the thickness of the hull. Ship interiors are heremetically sealed to maintain a relative humidity of 35%. According to Fleet Superintendent Pottinger mothballed ships can be kept indefinitely without any deterioration. Ships in the Mothball Fleet are actually in better condition than many in service.

The Jeremiah O'Brien

Enough is known about the Jeremiah O'Brien to indicate it is uniquely suited to commemorate its tough breed. It was built by the New England Ship Building Corporation in Maine in 1943, and has not been altered in any way since it was built. The ship was named for a famous Naval hero of the Revolutionary War. Coincidentally, his 85-year-old-great-great grandaughter, Elizabeth R. Bradford, lives in Mill Valley, not far from the Mothball Fleet. She recently christened a destroyer for the Navy.

Records show that the O'Brien served in both the European and Asian theaters, participating in the Normandy invasion and Omaha Beach. Later she sailed to the Orient and to ports in South America like Chile. The ship was a cargo carrier only, and never transported troops. Since 1946 the O'Brien has been part of the Suisum Mothball Fleet. That fleet now contains 128 ships—no line ships, only Maritime Administration auxiliaries.

As the Maritime Administration watched the Libertys disappear into the scrap pile, it was decided to select one of the type for future historical purposes. The O'Brien was chosen because as far as can be determined, it is the last known stock Liberty ship. Its design was never altered or modified. Although it will need a general refurbishing and repainting, before being converted into a museum, the ship is in remarkably good condition.

A prime mover in the ship memorial program is Thomas Patterson, Jr., regional director of the U.S. Maritime Administration in San Francisco, who began his career as a cadet aboard a Liberty. The National Liberty Ship Memorial effort that Patterson initiated intends to have the ship registered as a historical object and declared a national monumemt. The monument will be dedicated to the ship builders, steamship companies, seafarers, longshoremen, military forces, U.S. Maritime Commission, and all those who were part of the Liberty ship saga during and after WW II.

The memorial ship committee is made up of representatives from government and private industry, and funds are being raised from the maritime industry, service organizations, and other groups to pay for the memorial project. Patterson estimates it will cost about $500,000 to restore the ship and fit it with displays. The Smithsonian Institute, National Park Service, Department of Interior, California Parks and Recreation Department, and other agencies have already declared their interest and support.

The National Park Service is planning a site for historical vessels in the new Golden Gate Park in San Francisco. Piers are to be constructed at the foot of Van Ness Avenue between Fisherman's Wharf and Fort Mason. This facility would make an ideal home for the O'Brien, the memorial committee believes.

In a morale-building talk to workers during WW II, a Maritime Administration official told them that they were "fighting a war of ships, and American shipbuilders and shipyard workers held the destiny of the nation in their hands."

From the vantage point of 35 years, his pep talk was an understatement. Those behind the memorial ship effort are convinced the Liberty ship building program was an epic accomplishment that fully deserves to be commemorated. ■

Form No. 10-306 (Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR FEDERAL PROPERTIES

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC
SS JEREMIAH O'BRIEN

AND/OR COMMON
Liberty Ship JEREMIAH O'BRIEN

2 LOCATION

STREET & NUMBER
Not applicable (National Defense Reserve Fleet, Suisun Bay)
__NOT FOR PUBLICATION

CITY, TOWN
Not applicable X VICINITY OF Benicia
CONGRESSIONAL DISTRICT
Fourth

STATE California CODE 06 COUNTY Solano CODE 015

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	X PUBLIC	__OCCUPIED	__AGRICULTURE	__MUSEUM
__BUILDING(S)	__PRIVATE	X UNOCCUPIED	__COMMERCIAL	__PARK
__STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	__PRIVATE RESIDENCE
__SITE	PUBLIC ACQUISITION	ACCESSIBLE	__ENTERTAINMENT	__RELIGIOUS
X OBJECT	__IN PROCESS	X YES: RESTRICTED	X GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		__NO	__MILITARY	X OTHER: None

4 AGENCY

REGIONAL HEADQUARTERS: *(If applicable)*
U. S. Maritime Administration, Western Region Office

STREET & NUMBER
450 Golden Gate Avenue Box 36073

CITY, TOWN
San Francisco __ VICINITY OF
STATE
California 94102

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC. Office of Domestic Shipping

STREET & NUMBER
U. S. Maritime Administration

CITY, TOWN
Washington
STATE
Districe of Columbia 20230

6 REPRESENTATION IN EXISTING SURVEYS

TITLE
None

DATE
__FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS

CITY, TOWN
STATE

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
__EXCELLENT	__DETERIORATED	X_UNALTERED	__ORIGINAL SITE
__GOOD	__RUINS	__ALTERED	__MOVED DATE______
X FAIR	__UNEXPOSED		Not relevant

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

he S.S. JEREMIAH O'BRIEN is a World War II-vintage cargo ship designated in U. S. Mari-ime Commission nomenclature as an EC-2 type ("E" for "emergency", World War II being the mergency which caused design and construction of the type; "C" for "cargo", and "2" desig-ating a large capacity). It was the product of a standardized design, adapted from the esign of an old and time-proven British tramp ship which originated in 1879. Based on lans obtained from Sunderland in England, the New York naval architect firm of Gibbs and ox and the U. S. Maritime Commission drew up the detailed plans for Liberty ships. When hown the plans in 1941, President Franklin D. Roosevelt, a former Secretary of the Navy, pproved the efficiency of the proposed design but commented that the resulting ship would e "A real ugly duckling," a comment picked up and disseminated by the press and adopted y many.

he standard Liberty ship, including the S.S. JEREMIAH O'BRIEN, was 441 feet and 6 inches n length, with a beam of 56 feet, 10-3/4 inches and a loaded draft of 27 feet, 8-7/8 inche ts deadweight tonnage was 10,920, gross tonnage about 7,176, and displacement tonnage 4,300. The ship was designed to carry 9,146 tons of cargo with a full load of fuel. ommonly they carried more, with holds filled and in addition a deckload of planes or tanks rated aircraft or trucks, heavy machinery or railroad locomotives, or a combination of hese cargoes, loading them down to their Plimsoll marks or beyond with a 10,000-ton payloa he ship was designed for a crew of 44, but frequently had in addition a Naval gun crew of en or twenty or more, making the quarters cramped.

he ship has a single screw, steam reciprocating engine propelled, and is a full scant-igned cargo vessel with a raked stem, flush deck and cruiser stern. Its machinery is ocated amidships. There are five cargo holds, three forward of and two aft of the achinery space. Salt water ballast or dry cargo can be carried in deep tanks provided n Nos. 1 and 4 holds. Cargo handling was by steam winches with booms stepped at the asts and at a center line kingpost. Natural ventilation ducts lead to all holds.

he main propelling machinery consisted of a triple expansion steam reciprocating engine, ize 24-1/2 x 37 x 70 x 48 inches, manufactured by General Machinery Corporation, develop-ng 2500 IHP at 76 RPM and supplied with steam at 220 lbs. per square inch pressure and 40°F temperature at the throttle operating on 27" vacuum. The steam was created by two il-fired water-tube boilers, manufactured by Foster-Wheeler, of the cross-drum, sectional eader type. The vessel is equipped with three reciprocating steam driven 20 K.W. gen-erators, two Worthington designed boiler feed pumps, an enclosed crank-case type recipro-cating engine driven forced draft fan and main circulator. Fire, bilge, ballast, general ervice, and fuel oil service pumps are principally of Worthington design and/or anufacture.

he ship has not been altered in any way since it was built; however, because the ship as not been under preservation during the past few years, a general refurbishing and epainting of the exterior is necessary. The vessel has always been owned by the U. S. overnment. Realizing that their numbers were steadily decreasing as they became obsolete nd were sold for scrap, the Maritime Administration decided to select one of the type or "future historical purposes", and the S. S. JEREMIAH O'BRIEN was selected because of ts integrity to the original design and complete lack of alteration or modification.

riginal plans for this ship and the original report of its trials are on file in the aritime Administration Region Office in San Francisco, California.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	__LAW	__SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	__ARCHITECTURE	__EDUCATION	X MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	X ENGINEERING	__MUSIC	__THEATER
__1800-1899	X COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	X TRANSPORTATION
X 1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		__INVENTION		

SPECIFIC DATES 1943 - 1946 BUILDER/ARCHITECT New England Shipbuilding Corp.

STATEMENT OF SIGNIFICANCE

The S.S. JEREMIAH O'BRIEN, MCE-806, is a World War II "Liberty Ship", the sole survivor of 2,751 of that kind of ship. As the sole intact representative of the largest single class of ships ever built worldwide, the S. S. JEREMIAH O'BRIEN is of national level or first order of significance.

The so-called "Liberty Ships" were an emergency response to a critical shortage of maritime cargo ships in World War II. The first such ship, the S. S. PATRICK HENRY, was launched on September 27, 1941, even before the United States had become involved in World War II although it seemed likely it would. The emergency program accelerated after America went to war on December 7, 1941, and ultimately 18 shipyards across the United States produced 2,751 of the vessels, destined to be operated by more than 80 different steamship companies during the war. Their construction was a significant accomplishment in engineering design for mass production, and the ships were built to a high standard of performance for the time and under the conditions of wartime emergency. Manned by merchant seamen for the most part, they carried all kinds of wartime cargo, including food, fuel, ammunition, weapons and all kinds of supplies, through the Atlantic and Pacific Oceans, the Mediterranean and Baltic Seas, the Persian Gulf and elsewhere. In 1945 the last Liberty ship to be begun was the S. S. ORA ELLIS, whose keel was laid on July 23, 1945, the completed ship being delivered on October 16, 1945; but the S. S. ALBERT H. BOE, commenced earlier, was the last one to be delivered--on October 30, 1945. The total number built is a matter of dispute, 2,751 being the official figure, other claiming as few as 2,708, the American Bureau of Shipping recording 2,742. This includes 2,580 regular EC2 hulls, 60 Ocean-class Liberties built for Great Britain, 20 ZEC2-S-C5 aircraft transports, 12 EC2-S-AW1 colliers, 8 ZEC2-S-C2 tank carriers, and 62 Z-ETI-S-C3 tankers. But, whichever total is used, the Liberties still comprise the greatest standardized fleet in world history.

Some Liberty ships were operated by the U. S. Navy and used to supply landings such as the Invasion of Normandy where some of these ships were deliberately scuttled to form breakwaters called "gooseberries", while others supplied the troops on the beaches. Others were used by the Army Transport Service. A few were converted to serve as hospital ships. During the war they typically were armed for defense and many participated in combat involving attacks by enemy submarines and aircraft. More than 200 were sunk by enemy torpedoes or bombs or in storms at sea, while others survived such attacks with varying amounts of damage.

Following World War II, many Liberties were sold to shipping lines, both domestic and foreign, and thus entered peacetime merchant service to help rebuild a war-torn world. Others were "mothballed", although some were restored to service for the Korean War in 1950 and to meet increased shipping demands caused by closure of the Suez Canal in 1956.

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Many of them were modified over the years in various ways, few retaining the integrity of their original design. In time, as they wore out or became increasingly obsolete, the ships were cut up for scrap. The history of these more than 2,000 ships is complex and much more lengthy than can adequately be summarized here, and there are a number of entire books devoted to their history: suffice to say that the Liberty ships played an important and essential role in America's participation in and ultimate victory in World War II and in the history of the post-war world's commerce, and a lesser role in America's involvement in the Korean War.

The S.S. JEREMIAH O'BRIEN is not the most historically significant Liberty ship in terms of historical association, as it was neither the first nor the last, nor one that played an important role in any particular combat action or convoy activity. But it is the last surviving Liberty ship that has integrity of its original design, and as a representative of its class it embodies the distinctive characteristics of a type of vessel of national significance in the areas of military (naval) history, (naval) engineering, (maritime) commerce (during wartime), and (wartime) transportation.

The S. S. JEREMIAH O'BRIEN was constructed as MCE Hull 806, New England Shipbuilding Corporation (formerly Todd-Bath Iron Works) Hull 230, in that firm's shipyard at South Portland, Maine. The keel of the S. S. JEREMIAH O'BRIEN was laid on May 6, 1943 and the ship was launched on June 19, 1943. The ship was given a dock trial between 6 A.M. and 1 P.M. on June 28, 1943, and a maneuvering trial in Portland Harbor on June 30, 1943, on which date it was delivered to its operator. Owned by the War Shipping Administration, it was operated for the duration of the War by the Grace Line, Inc. It is known to have carried dry cargoes such as ammunition and grain on routes between the Eastern seaboard and the United Kingdom and the Continent, and in 1946 returned to the Pacific Coast from a voyage to Fremantle, Australia. In November 1946, the Grace Line turned it over to the Army for conversion into a hospital ship, but the conversion was never made, and the ship ended its last cruise at Suisun Bay, California, where it was placed in "mothballs" in the U. S. Maritime Administration's National Defense Reserve Fleet.

Jeremiah O'Brien was an Irish-American native of Machias, Maine who, in June 1775, with other residents of the town, seized two British merchant ships and, with O'Brien in command of one, used them to capture the British armed schooner Margaretta, thus winning the first naval battle of the War of the American Revolution. After a second similar victory, O'Brien became a privateer and for three years disrupted British shipping, was defeated by two frigates and captured, was imprisoned in England, but subsequently escaped, returning home just as the Revolutionary War ended.

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10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY irrelevant - property is an object and has no acreage.

UTM REFERENCES

	ZONE	EASTING	NORTHING		ZONE	EASTING	NORTHING
A	[illegible]	[illegible]	[illegible]	B			
C				D			

VERBAL BOUNDARY DESCRIPTION

As the subject of this nomination is an object and specifically a ship afloat in water, this category is irrelevant. The object is included in its entirety, but its significance does not rest on its present location as indicated by the above UTM coordinates, and any maritime environment on either the Atlantic or Pacific Coasts of the United States is a suitable location.

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE T. J. Patterson, Jr., Western Region Director, U. S. Maritime Administrati assisted by Gordon Chappell, Western Regional Historian, National Park Service.

ORGANIZATION U. S. Maritime Administration

DATE December 22, 1977 Revised: January 10, 1978

STREET & NUMBER 450 Golden Gate Avenue, Box 36073

TELEPHONE (415) 556-3816 (NPS: 556-4165)

CITY OR TOWN San Francisco

STATE California 94102

12 CERTIFICATION OF NOMINATION

STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION

YES____ NO____ NONE____

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

In compliance with Executive Order 11593, I hereby nominate this property to the National Register, certifying that the State Historic Preservation Officer has been allowed 90 days in which to present the nomination to the State Review Board and to evaluate its significance. The evaluated level of significance is ____National ____State ____Local.

FEDERAL REPRESENTATIVE SIGNATURE

TITLE DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST: DATE

KEEPER OF THE NATIONAL REGISTER

n No. 10-300a
. 10-74)

UNITED STATES DEPART[illegible]NT OF THE INTERIOR
NATIONAL PA[illegible] SERVICE

[N]ATIONAL REGISTER OF HISTORIC PLACES
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CONTINUATION SHEET ITEM NUMBER 9 PAGE 2

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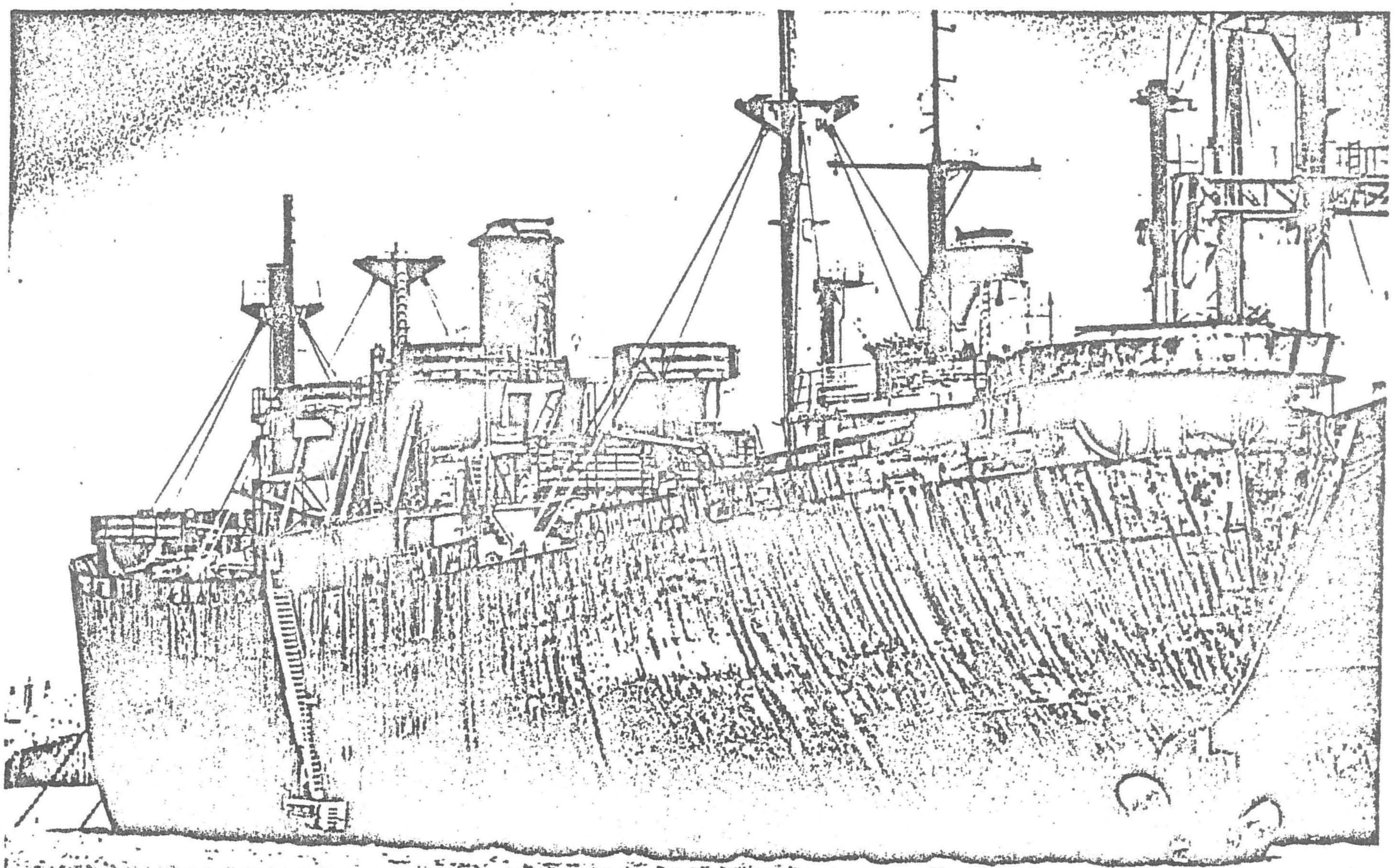
S.S. JEREMIAH O'BRIEN

Associated Press photo

SOLANO COUNTY, CALIFORNIA

THREE QUARTER (REAR) VIEW OF PORT SIDE AND STERN

VIEW TOWARD WEST.



Excerpts from <u>Storm Song</u>

Night past and dawn breaking as men and ship awaken to a new day

TWO

DAYBREAK ON THE BEST managed ships initiates a rebirth of activity. Even on the *Joshua Blackmer* men awoke and worked.

The quiet of the ship is first disturbed by the faint tinkling of an alarm clock bell as the cooks and messmen awaken to prepare breakfast for the others. These first stirrings rapidly expand into a crescendo of noise as more and more men awaken and go through their individual rituals for getting up.

Doors and drawers open and close, some quietly, most with noise to add to the growing volume of sound. Individual sounds cannot be separated from the medley of running water, metal against metal, feet shod and unshod against decks, voices muted and loud, pans and dishes and curses and bumps. The familiar sounds of life reviving from sleep.

On the bridge, the four-to-eight watch hears the building noises and starts thinking their watch will soon be ending. Soon the pleasant and distinctive aroma of frying bacon will rise through the ventilators, assail their senses and arouse in them pangs of hunger that would not be satisfied until the end of the watch.

Deep in the bowels of the ship the watch engineer makes his rounds. He reads and notes the pressures on the many steam gauges, temperatures of critical engine bearings and the totals on the consecutive revolution counter. The oiler has the mid-watch coffee made and the three-man engine-room watch would soon have a mug up.

In the quarters on the main deck an ever increasing level of activity centers around the galley and the messrooms. The cooks, having fired up the range and arranged their skillets, oven racks, and porridge pots, relax over a cup of freshly brewed coffee. Early risers from the deck and engine watches below also assemble in the messrooms for the first of many cups of coffee they would drink that day.

The messroom of a ship is the great council chamber, the witness and jury room of the court, the parliament, and the natural habitat of the sea lawyer. This is the focus of interest, conversation and intrigues of the crew. In the messroom all the ills of the world, every weighty problem of international intrigue, and the comparative virtues of blondes, brunettes, and titian-tressed girls are disposed of at a single sitting.

In this focal point of opinion many subjects are discussed, always with a protagonist and an antagonist, or a group of each. There is no subject where no opinion is expressed.

Thorough discussions are held on such widely varied subjects as cunt and coal dust; fights and frolics; guns and gold; jealousy and jobs; justice and jails; love and laughter; politics and propellers; riots and racing; roofing and religion; strikes and surgery; trains and taxicabs; unions and universities; wars and whores. One will be found to argue for, and one to argue against any point of view.

One subject often discussed is the day-to-day management of the ship. In spite of the interest in and long discussions about this matter, no influence is evidenced.

Seamen, in addition to being well travelled are widely read and thus become expert on a wide variety of subjects. It is sometimes surprising to the listener to hear some savant in a ragged tee shirt, a pair of well-worn dungarees and down-at-the-heel, cheaply made shoes, discourse on the economic theory of supply and demand, the pressures that create a bear market and the justification for raising the limit of the national debt. The debates go on with each exponent of theory deadly serious in his righteous belief that his position is correct.

Nor is it unusual, quite the contrary in fact, to find the protagonists taking diametrically opposed positions at some

subsequent resumption of the discussion. To the uninitiated, this sometimes appears to be overwhelming evidence of the power of each argument in the preceding debate. Only on the matter of shipboard administration and discipline is there any constancy of opinion. This opinion seems to be universal on every ship, without regard to the personalities involved.

Always, the officers are incompetent and would not have their positions except for one of three influences in their favor:

1. A powerful friend or relative within the management structure of the company;
2. Some lodge or church affiliation that outweighs individual competence; or
3. Luck.

With incompetent officers the only thing that keeps the vessel going is the excellence of the crew. Therefore the crew is smarter than the officers. Q. E. D.

On a Liberty ship as the *Joshua Blackmer* the officer's messroom or saloon and the crew's messrooms are separated by thirty feet, geographically. The two rooms separated even further by class are inevitably joined by the "galley wireless." Whatever is discussed in the saloon is immediately known in the crew mess. Information in the other direction is slower, being dependent upon informers. Information is exchanged, timing is uncertain.

The officer's dining room, called the saloon for some obscure and long forgotten reason, bears a recognizable resemblance to the messroom of the crew. Physical differences are many: white table cloths instead of checked red or blue cloth. Cloth napkins in place of paper. Crockery with a blue stripe. Cups with saucers under for tea and coffee. Side plates for bread and butter and side dishes for vegetables and the room on the table to accommodate the extra crockery, and stainless steel cutlery in the saloon. These knives are sharp and saw-toothed. In the crew's messroom it is less elegant: red line crockery, mugs for coffee and tea, no side plates or dishes and nickel-warm cutlery dull enough to slice little more than butter.

Other differences are more subtle. Dress in the officers' area is somewhat more formal, shirts, and sometimes neckties and jackets replace tee shirts. Fewer and less earthy expletives punctuate conversation. Debates and discussions cover the same range of subjects in both saloon and messroom. In the saloon statements are more opinionated. Opinions become increasingly dogmatic as the rank of the speaker increases.

Now the ship was a month out of Baltimore and fourteen days from Los Angeles. Four evenings ago the *Blackmer* had been approximately five hundred miles north of Honolulu. Radio receivers had picked up the melodic strains of steel guitars and ukeleles. Officers and men alike continued to talk about the islands and their various recollections of previous experiences during calls to ports in the territory.

The longer the voyage the more inane the conversations become. As favorite jokes are retold for the nth time tempers become short and tend to flare. Arguments become bitter and threaten to escalate into fights. Differences in personalities become exaggerated.

A call into some wayport, meeting another ship, an interesting news event heard on the radio, an accident to a shipmate or a casualty to the vessel will ease the tension by adding new grist to the conversational mill.

Without these changes conversation becomes desultory and commonplace. It is noteworthy for its nothingness, boring in its boredom. Unimaginative rhetoric seems to delight the unimaginative conversationalist. Questions with obvious and uninteresting answers are repeatedly asked. Trite expressions are tritely used with no one the wiser. Nor is there ever any complaint. Who would?

In the daily quest for an interesting change of topic, each man is as guilty as the next in his failure. This day would be like all the rest. Nothing new, everything a boring repetition of previous days equally boring.

Quarters too closely spaced deny men the privacy they seek

THREE

By six bells (seven o'clock) the messrooms were cleaned up, dishes from the previous night washed, dried and put away in racks, the tables had been set for breakfast and the messmen were relaxing over a cup of coffee.

Curly Baum and Poet Arthur were seated at the smallest of the three tables, shooting the breeze. It was easy to see how Baum had acquired his nickname. Baum's forehead was high, it extended to the back of his head and was surrounded by a slight fringe of pinkish hair. Pink was the color for Baum. His face was round and pink, his well manicured hands were puffy and pink, his scalp was the color of lightly sunburned flesh. Curly was short, well fleshed and surprisingly pink, that's all that can be said for him. With hair he undoubtedly would have been called "Pinky."

Poet, the antithesis of Curly, six foot three, about one hundred and sixty-five pounds, all arms and legs and angular, had just ladled two heaping teaspoons of sugar into his coffee mug and was now filling the mug with condensed milk. Curly, drinking his coffee black, shuddered.

"Christ, Poet, what are ya drinking, coffee or a milkshake?"

"Drink what you like, Curly, let me do the same."

"Hell, don't get mad."

"Oh, I'm not mad, just grouchy this morning."

"I guess a guy's got a right to be grouchy if he wants, particularly on a long trip like this."

"Yeah. And more right than ever on a damned jinxed ship like this!"

"This is about the longest trip I've made. How far is it from L.A. to Kobe?"

"Too damned long, that's all I know."

"Y'ever been to Kobe, Poet?"

"Never been to Japan, didn't go to sea until after the war'd started. How about you?"

"Once in thirty-five, always wanted to go back. Man! Wait'll you see them gals. See them hell, if you've never been to bed with one of them Japanese whoors you've never lived."

"Christ sakes, why do we always wind up talking about whores? It's what you'd expect of Ryan but not you."

"Not me? Why the hell not? Think I'm queer or something? Let me tell you, Poet, when it comes to girls I'm as queer as a three dollar bill."

"Now who's getting mad? I didn't call you a fairy, just wanted to know why the subject always has to turn to pussy. What is Japan like? And I'll take your word about the girls."

"You'll be able to see for yourself in about another week. Don't ask me to guide you. I know where I'll be heading and what I'll be doing won't require any help."

"I can imagine! Oh oh, here come the gang and they sound hungry."

The eight-to-twelve fireman, two ABs and the carpenter came into the messroom together.

"Morning, Chips," said Poet, "same as usual?"

The carpenter grunted assent.

"Saturday again, Chips, ham this morning instead of bacon."

"Okay, ham then, and a couple eggs over easy."

"Hey, Curly," shouted one of the ABs, "order me some scrambled eggs and ham, lots of spuds."

"Same for me, Curly," ordered the fireman.

"Make mine sunny side up, ham and spuds," said Tex Texiera, the other AB.

While the two messmen were out of the room to place these orders at the galley, the rest of the men going on duty at eight came into the messroom.

Olaf, or Ole, Andreason, the carpenter, was a transplanted landsman, inclined to keep much to himself even while eating. His long, lantern-jawed face, full lipped mouth and large ears set on either side of sorrowful eyes with deep pouches under, reminded the observer of a faithful hound. The deeply tanned countenance was capable of humorous expression. It was normally taciturn.

Other men—day workers and watch standers came into the messroom, gave their breakfast orders, ate and left the room for their duties of the day. As always there was little conversation. Men just awakened and with no thoughts other than for the routine work ahead.

Workers paired off or worked at individual tasks. Some found the work interesting. A few were inspired. Most were bored. There is a deadly sameness about sweeping or swabbing the same narrow alley for the umpteenth time. Can the cleanliness of a cup or plate be judged against how clean it was yesterday? And what difference does it make?

Scaling rust from a bulkhead only differs in where the rust is found, not in how the job is done. Red lead is red lead wherever it is used. The width of a paint brush may change the number of strokes needed to paint a given area, nothing else.

An intricately detailed fitting of some machinery part remains interesting only until the back starts to hurt, or the eyes smart from strain. Patience is a virtue only to the impatient.

Splicing rope is a challenge until the soft flesh of the hands becomes alive with short fiber stickers. Memories of work with wire, grease or coal will last as long as the pores remain full of whatever residue is lodged there.

How many times can a singlet be laundered? A shirt? Pants? Why bathe? Won't you get as dirty tomorrow?

And the sun rises every morning, climbs to its zenith and sets. Day after day after endless day.

Always, on every side the sea, the never changing, unending sea.

Overhead the blue bowl of the sky, sometimes cloudy, sometimes overcast, but most often clear. The sun glaring in its brightness, oppressive in its heat, bouncing reflections, blinding the workers with heat induced salt sweat.

Nights too short for rest, too long for dreams. Night skies alive with stars, constant, immutable. Men sleepy when on watch, wakeful when not.

And ever the same faces, the same banal words and thoughts and expressions.

God! Would it never end?

Boredom, endless boredom sets nerves on edge
and makes men tired and cross

FOUR

TASKS PERFORMED on a daily basis by the crew of a modern steamer can best be described as the most boring of routine. Watches change every four hours and the jobs done by the previous watch, and on one's own last watch, are repeated.

On the bridge the deck officer keeps a lookout day and night for other vessels, reportable objects on the surface of the sea, landfalls and conditions of weather.

In clear weather sights are taken of visible celestial bodies and the position of the ship is periodically determined through calculations.

One seaman relieves the wheel every one hour and twenty minutes, each third of a watch. One seaman is nominally on "stand-by" to act as messenger for the watch officer when needed. The third member of the watch performs such maintenance tasks as might be assigned.

At night one seaman keeps a lookout, one keeps the coffee pot hot while on stand-by and the other is on wheel-watch steering.

In the depths of the ship the watch engineer supervises the operation of the machinery, the oiler lubricates all moving pumps, engines, machines, generators, and main engines and the fireman keeps the proper steam pressure in the boilers.

Firemen change fuel-oil strainers when coming on watch, cleaning the removed strainer against the next watch's use, and clean all burner tips before going off watch.

The wipers work under the direction of the first assistant on various maintenance jobs and blow the boiler tubes once a day, usually at the end of the day's work period.

There is no real variance to these daily routine requirements. Occasionally a failure of one or more components will occur and the required repairs provide some changes from boredom.

The appearance of another ship, bound for anywhere, is always a welcome break in the pattern. So, too, weather changes, particularly from rough to smooth, from cold to hot, from hot to cool, and from rain to clear are always welcome.

On Saturdays and Sundays the routine varied to the extent that no extra work other than watch standing was done. Most seamen use these hours to launder their clothes, write letters home, read or just sit around the quarters of messrooms yarning.

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Gooney birds and dolphins convoy the lonely ship across the date line

FIVE

A MOVING ISLAND, four hundred and twenty-eight feet long, fifty-eight feet wide. That was the *Joshua Blackmer*. It was alone on the placid sea. All her workers and idlers were on, in or below the eighty-by-fifty structure that was her amidship house.

A month after completing her loading and sailing from Baltimore there still was no unifying and cohesive force to make them a *crew*. Nor had the ten days in the "horse latitudes" of the North Pacific Ocean done anything to improve the conditions that kept them separate. The hot days with not a breath of air to relieve the sweaty discomfort, and the hot and humid nights kept men's nerves touchy.

Most of the *Blackmer's* crew were essentially loners. Kowalski was self-centered and contented with his scrambled memories. Horace Milljus was a homosexual alone in a group of heterosexual males proud of their virility. Baker was the solitary black among the small group of officers. Tanksley was the solo drunk. Each was an island insulated from his shipmates by a deepening chasm of misunderstanding, mistrust or just a lack of similar interests.

It was true that the men worked together on occasion and when the job required. And they exchanged banal comments during meals and in their idle hours. They had some minor complaints, about the weather, the length of the voyage, sometimes the food, but no real major gripe that would serve to unify them. There was potential for a magnificent brouhaha. The slightest conflict could broach the top of the powder keg, then only a match to ignite the fuse would be needed. Taut tempers were getting tauter as the days of the voyage lengthened.

And it was Saturday on the slowly moving ship upon the quiet ocean. It was only due to her tirelessly turning engine that she was able to move. Had she been dependent upon sails for propulsion she would have been "a painted ship upon a painted ocean" as described by Samuel Taylor Coleridge in "The Ancient Mariner."

Dolphins and gooney birds were the only other visible living creatures in this small segment of the universe. Dolphins are highly intelligent marine mammals, and gooney birds are the northern albatross: small, with a scant four-foot wingspread. The birds and the mammals tirelessly escort ships of every nation across the trackless routes of the sea, and they were convoying *Joshua Blackmer.*

At 1300, one o'clock P.M. the general alarm bell was rung on the bridge by Rudi Visser, the second mate, and the ship's bell on the fo'csl head was rapidly rung by one of the watch ABs. It was the weekly fire drill to be followed by boat drill.

Three hoses on the fore deck and three on the after deck were stretched from their hydrants. Valves were turned on and when the fire pumps in the engine room had been started, the limp hoses bleeped trivial streams of sea water over the side and returned it whence it came.

After the hoses were observed to be carrying water for a minute or so, three short rings of the bell dismissed the men from fire drill.

Seven short rings and a long one accompanied by the same signal on the steam whistle called the crew from fire stations to the boat deck for abandon ship drill. The four lifeboats, two to starboard and two to port were uncovered, swung out on their davits, swung back in and secured. Crew's for each boat were mustered and absentees noted.

This weekly departure from routine was finally over and the men shuffled back to their previous activity or inactivity.

In the chart room, after writing the entry concerning the fire and boat drill in the bridge log book, an entry required by law, Rudi Visser looked at the clock over the chart table, noting the time. He then made another entry under "Remarks," "1350 vessel crosses 180th meridian from West to East Longitude in Latitude 32° 02′ North." The *Blackmer* thus dropped Sunday August 17 from her calendar. Chronologically, none of her thirty-nine souls would live that day. And Rudi Visser would miss his forty-eighth birthday!

****

Bread baking changes routine, seas pursue the ship through a long, dark night

SEVENTEEN

Shipboard routine during certain hours of the day seldom varies. Outside of their work or watch periods men follow regular patterns of behavior. For example, Rudi Visser, nightly left the saloon, returned to his stateroom, carefully removed one churchwarden pipe from the case and slowly smoked it. Every night the same.

Another example was the nightly cribbage game between the bo's'n and carpenter. Like clockwork one could expect to see the two of them at the same places at the same table in the rec room. Routine. It gave the men a sense of permanence, a sense of comfort in the rough world in which they lived.

On this Friday night in late August 1947, the routine was being broken. There was unusual activity in the galley. Pans were rattling. Batter was being mixed. A power-driven dough mixer was noisily twirling a metal paddle in a giant tinned metal bowl. In the warmth of the close still atmosphere Ray Bloom and Professor Watkins were readying bread for baking.

Watching them through the closed service screen, Dale Scroggins remarked to no one in particular, "Smayulls just lak Ah remaimber the chuch waggin when Cookie mayud brayud on trail."

The fact that Scroggins had never been on a trail drive in his life, that his cowboy airs had all been learned from Ken Maynard movies, didn't matter. Bread, being fresh-baked before their eyes, brought differing memories to each of the men. And just the preparation of the dough, the kneading by machine, the cutting of the dough into loaf-sized pieces, placing in the square two pound sandwich loaf pans, letting the dough set for rising, every step was interesting. And, the routine was broken. Something different was happening if only briefly.

The locale for the nightly bull sessions had moved from the messrooms and rec room to the narrow space outside the galley. The Professor was a good baker and efficient. By seven o'clock he had the dough ready for the pans. Rising of the dough did not take long in the warmth of the galley.

Shortly after eight the odor of freshly baking bread started to replace the stale slightly sour odor which was the result of no ventilation. It was a welcome change. The men sniffed deeply smiled, and happily chatted away, forgetting for the moment the rolling slight pitching and the threatening weather conditions.

Before the evening had passed, Bloom and the Professor had turned twenty loaves of bread out of the two-pound pans. They would freeze them in the ship's freezer box after the loaves had cooled. There would be plenty of bread for sandwiches if needed.

After the bread had been put in the ovens, the spectators around the galley had drifted away to other pursuits. Some of the men had tried to return to normal activities. The tables in both the crew mess and the rec room were situated fore and aft. Chairs thus were faced across the axis of the ship's rolling motion. With the deeper rolls it was very uncomfortable to just sit at the table. Playing cards was out of the question, there was simply no way to shuffle and deal the cards while hanging onto the chair or table for dear life.

There was a speaker from the ship's broadcast radio receiver in each of the rooms. Despite the time differences there was usually a program, someplace, that could be picked up and would interest some of the men. The level of static was so high nothing intelligible came from the speakers.

One of the wipers had an old, well-travelled, crank-wound

phonograph and an outstanding array of Western and Pop recordings. He brought the machine to the messroom with an armful of records. But the ship was so unsteady the needle would not stay in the groove. The heavy tone arm slid the needle across a new record of "The Tennessee Waltz" by Eddie Arnold, ruining the disc. The wiper returned the phonograph to its place of stowage. He looked at the record, sadly running the nail of his index finger over the deep scratch.

The messrooms were empty by nine. Sociability wasn't worth the effort. Nothing was worth the effort of trying to get comfortable or sustain comfort in the increasing violence.

The ship quieted down after a fashion, but some noises prevailed. A locker door slammed with a metallic clang. A muffled curse as a bare toe kicked a solid obstruction. The watery flush of a toilet. Chairs sliding across the deck. The sudden crash of a swinging door reaching the end of its arc. One very loud crash when a small stack of dinner plates fell from the saloon sideboard to the deck.

On the bridge many sounds played counterpoint to the moaning of the wind through the rigging. Creaking noises of wood, metal, and rigging blocks. The dissonant sounds were part of an awful symphony. The roll had now surpassed by far the easy motion of the previous days. The *Blackmer* was doing her best to outdo the deservedly bad reputation of her thousands of sisters. The Liberty ship was known to every man who ever sailed in one for the sudden and unpredictable changes in direction of motion in a seaway. Some called it "corkscrew" in attempting to define this characteristic. Experienced seamen have on occasion been literally thrown from their feet or their bunks by this action.

In the dark of the early night the creamy crests of the breaking seas were ghostly, hissing in their anger at not catching the fleeing ship. Occasionally a sea would break over the rail of the afterdeck, crashing aboard, swirling around hatches, winches, and other deck fittings. Accompanying such sounds and sights was a perceptible shudder, much like a dog shaking himself to rid his coat of water. In the blackness of the night, imagination pictured these boarding seas doing extensive damage.

Visibility to the lookout, stationed in the lee wing of the bridge was limited to a mile. What visibility he had was hampered by the wind-blown spray that stung his cheeks and lacerated his eyes. The green of the starboard running light reflected with a blinding glare from the foam of the running sea. The lookout closed his eyes against the glare, squinted to keep his vision still through watering eyes he barely saw. His eyes were closed more than they were open. He was drowsy. Where he had been reacting to the stinging spray by closing his eyes, now he was fighting to keep them open.

Larson, whose trick it was on lookout, was an experienced seaman. He knew his drowsiness was caused by several factors, not the least of which was the general lack of spirit caused by the low atmospheric pressure. He struggled against the drowsiness and resolved that he would be more wakeful for the remainder of his watch.

MacIvor had made several attempts to complete some of the never-ending paperwork attendant to his job. With half his concentration centered upon strange and disturbing noises, each of which he related to some piece of machinery he was ineffective in his attempt at work. He lacked the concentration to read and had finally and reluctantly decided to turn in. Not wanting to be thrown out of his bunk by the vessel's motion, and influenced by many years experience, he wedged himself in between the bunk board and the bulkhead.

This wedging-in was quite simple. Back to the bulkhead and knees jammed hard against the bunk board was not the most comfortable way to sleep, but effective. Scotty thought he would like to have a few more pounds of flesh to cushion against the hardness of the bunk board. He should at least awaken still in the bunk and not on the deck.

Before turning in for the night, Ogilvie visited the bridge at a few minutes after 2200. He checked the glass and saw it now read 29.48 inches of mercury with the gradient about the

same as before. The last weather entry in the log book indicated the wind was still southeast, force seven. This indicated the storm center lying west-southwest of the *Blackmer's* position was more than three hundred miles away. The estimated position of the storm, from weather advisories received, should be ten degrees of latitude or six hundred miles, south of the ship's latitude and more than seven degrees of longitude west. The gradient indicated it could be as close as three hundred miles. The reported center of the storm was obviously in error.

Leaving the chart room and entering the wheelhouse, the captain quickly moved to the windows in the center of the forward bulkhead. As his eyes slowly became adjusted to the darkness, he realized the universe was closing in around his ship. His world was limited to a circle of visibility of no more than a few hundred yards. He had a feeling of disembodiment, cut off from reality. He had felt this way before in periods of dense fog, nothing existing external to the ship.

He felt the motion of the ship through his feet, as all seamen do. Although irregular in its motion, it was ceaseless. Rolling deeply to starboard, the ship's bow might plunge. Rolling less deeply to port the bow might, or might not remain comparatively motionless. Next roll to starboard might be deeper and with the bow rising. The action, whatever it was, confirmed the impression of a very confused sea and swell.

Ogilvie thought the sea condition might be somewhat rougher than it had been earlier. This impression, he knew, was probably influenced by the mystery of the surrounding darkness and the inability to see and accurately gauge the height of the sea and swell.

As he continued to observe, evaluate and ponder about the weather, he remembered the chief engineer's concern about the engine racing. "Mr. Matthews," he ordered, "reduce engine speed to sixty RPMs."

"Sixty RPMs, sir," answered the third mate moving to the telephone and calling the engine room.

"Reduce speed to sixty RPMs," he ordered when the third assistant answered the telephone. Then hanging up the handset he told the captain, "Engine room reducing speed to sixty RPMs, sir."

"Very well, thank you," the captain responded, remaining to observe the reaction of the ship to the slower speed.

Satisfied that the slower engine speed had moderated the motion, he left the bridge.

In his office again, Ogilvie considered what night orders he would write. Then he pulled his night order book to him and carefully wrote:

> SS *Joshua Blackmer* Friday August 22, 1947, Enroute Los Angeles Harbor, California, towards Kobe, Japan. Observe standing orders. Maintain an alert watch. Check compasses frequently. Check lookout frequently. Weather may deteriorate during night. I am to be immediately notified of any change in wind direction or force, any change in the state of sea, or if barometer falls below 29.40 inches. Remember: "Eternal vigilance is the price of safety!"
>
> Geo. Ogilvie, Master

He carried the book to the wheelhouse, handed it to Matthews and said, "Night orders, Tom, take them into the chart room, read and initial them. I'll relieve you."

"Yes, sir," said Tom taking the book, "steering 265 to make 270 good, speed sixty revs, nothing in sight."

During Matthews' brief absence, Ogilvie again judged the motion of the ship to see if any further reduction in engine speed was needed. The ship seemed much easier and he decided to leave the present speed unchanged during the night.

On returning to the bridge, Matthews remarked, "Glass is now down to 29.47 inches, sir."

"I fully expect it to continue falling, Tom," said the skipper, "that's why I asked to be called, nay ordered that I be called if the glass drops below 29.40!"

He was impatient. Why had he felt the need to explain to the young officer? Hell, Matthews couldn't know he expected the glass to continue falling. The orders he had written certainly gave the impression the ship was heading into some damn dirty weather.

Ogilvie had no real complaint about Matthews' competence. Always mechanical in his responses, strictly correct in obeying any order, he never volunteered an idea or a thought. *Oh damn,* thought Ogilvie, *it's been a long day and I'm tired. This is no time to be criticizing or judging anyone's performance, particularly mine.*

"Good night, Mr. Matthews," he said, turning and leaving the wheelhouse.

Matthews, waiting as the door closed behind the skipper thought, *only a half hour to midnight and I can turn in myself. Thank God this watch is nearly over, my legs are tired.*

Ogilvie was wedging himself into his berth in much the same fashion as that employed by MacIvor when he heard two bells from the engine room. *Ten minutes before the change of watch at midnight,* he thought, *tomorrow may be a long day. Better get some sleep.* And, because he wanted to sleep, he remained fitfully awake. When sleep finally came he dreamed of high winds and mountainous seas battering his ship relentlessly. He spent the night tossing and turning, with thoughts about procedures, fighting for rest.

The bridge and engine watches changed at midnight. Men coming on watch fighting the usual fight against drowsiness, wanting to remain in bed until awakened naturally, were jealous of those who had earned rest.

Men came off watch, meeting briefly in the messroom. Deck watch members told the engine crew of the deteriorating weather. Engine crew, looking for something equally alarming, commented on the worn bearing. Both groups satisfied they were "one up" on the other. All weighed the truth by their own exaggeration and went to bed with no worries.

The ship, for a short time aroused for the change of watch, again settled into an uneasy quiet.

Gerry Schneider tried to stay with his wildly gyrating bunk. How frightened he had been just twenty hours ago when he had awakened to the deep roll of the ship.

Still unable to picture what the morrow might have in store, he was better able to accept the bad weather. None of the others had shown any concern. Why should he? He had worked hard all day and was dog tired. He dropped right off to sleep.

As soon as he was left by the third assistant, Vic Sylvestri made a round of the floor plates. He noted that the engine was turning much easier at the reduced speed. With less demand upon them, the boilers were steaming easily. Always when first coming on watch, the motion of the ship seemed severe. Now the rolling appeared easier than he remembered it from the previous day.

Satisfied that the plant was normal, Sylvestri sent Ryan the oiler on the first oiling round of the watch. He next turned his attention to the fireman, busy cleaning the oil strainers in the fuel line. *Routine work,* thought Vic. *If the damn bucket turned upside down we'd still be doing routine jobs. Clean strainers, start of watch. Clean burners, end of watch. Pump day tank. Test boiler water. Send oiler on rounds to steering engine. Routine, routine, routine.*

Ryan returned. He had no comment which indicated nothing out of the ordinary. Then he performed a pleasant routine task. He built the first pot of coffee of the watch.

"Hey, Second," he called over the noise of the engine, "why can't that bleepin' cowboy oiler on the eight-to-twelve clean up the coffee pot and the mugs? Third time this week that shitkicker's left it for me to do!"

Sylvestri, before answering, glanced at Ryan, who was busy at the fresh water tap cleaning the pot and the several mugs. He decided not to answer. Ryan was again sounding off, no sweat. Before they got off watch at four, they would have made and drank several pots of coffee. And Ryan would complain each time he had to clean the gear. He would probably forget to clean the pot for the next watch.

Sylvestri waited impatiently for the first of many mugs of coffee he would drink this morning. The first brew was the memorable one, strong and black, sometimes laughingly referred to as "plasma." One transfusion would awaken anyone.

Rudi Visser stood in the center window of the wheelhouse holding tightly to the grab rail that ran across the bulkhead under the windows. He knew from the looks of the weather he should have dressed more warmly. The temperature was fifty-six degrees, not too cold, but the air temperature had been in the high seventies and low eighties for quite a spell. Now, with the weather freshening and the humidity high, there was a chill factor he had not counted on when he dressed. Of course he could always have the stand-by man bring him a sweater and coat if he really needed it.

There was a pale glow over the middle of the wheelhouse caused by the lamp in the binnacle and the indicator lights on the running-light panel. Visser cast his glance around to see what objects were distinguishable. He saw the wheel stand and half the reflected face of the helmsman behind the wheel. He could barely make out the log desk and the dull glow of the polished brass telegraph to the engine room. He sensed, rather than saw the handle of the whistle pull and could distinguish the outline of the open starboard door. The rest of the room was in deep shadow.

Peering through the starboard door he saw the huddled figure of the lookout. The lookout's shoulders were hunched against the cold. His hands were deep in his overcoat pockets. His watch cap was pulled hard down over his ears. The man's nose was just level with the bridge rail and he was motionless. Knowing the dangers of drowsiness, particularly when first coming on watch from sleep, Visser called out, "Hey there, Jim, move around a little, don't want you growing there!"

"Okay, mate," acknowledged the hapless Jim, thinking, *it's alright for me to be out here in the weather but you, mister high and mighty, you can stay in the nice warm wheelhouse.* Jim felt abused. Why couldn't he stand somewhere in the lee, warm and comfortable, instead of moving around on this cold bleepin' night when there wasn't a God-damn thing to see.

Jim's partner was having some trouble keeping the ship on course and maintaining his balance at the same time. The ship's head wanted to run to the right every time the roll was to starboard. If he gave too much left rudder to compensate on the next roll to port the bow tended to slam into the sea.

Moisture in the air made the highly varnished grating behind the wheel difficult to stand on, his feet had nearly slipped from under him a couple of times. Only his grip on the spokes of the wheel had saved him from a nasty fall.

The clock struck two quick bells for one o'clock and the wheel trick was half over.

Restlessness increased in the quarters as the night wore on. Contrary to the norm when men went to bed to sleep and didn't awaken until called, tonight they were unusually restless. Men were constantly getting up, then returning to bed. Traffic in and out of rooms and to and from heads, messrooms, and scuttlebutt was continuous and unending. The mood was contagious. Doors opened and closed. Feet in shower clogs clattered along the hard decks. Everywhere were the sounds of unrest.

The long watch and the longer night passed ever so slowly. The animal odor of snoring sweating men mingled through the night with the pungent fish odor of Friday's cooking. Urine in unflushed toilets sloshed and stank. Oily steam from the engine room mingled with myriad smells, undefined but not undetected. When the long night was ended, no one was rested or refreshed. Watch-standers ached in their leg muscles and in the musculature of their backs. Energy was at a low ebb from fighting to keep balance on the decks of the constantly and violently rolling ship.

Four o'clock came and went with the change of another watch. Five o'clock came and went, and finally six. It was at last time for the stirrings of another day.

The steward department workers, Ray Bloom, chief, and third cooks, and messmen were called at five-thirty. Messmen noted the lack of messroom activity on the previous night.

There were few dishes in the sink. Most of the cold cuts in the night lunch remained undisturbed. Dried and curled slices of cheese, slices of bologna, blood sausage, and head cheese were untouched and unappetizing. On a usual morning there would be a dozen or more dirty cups carelessly piled in the bottom of the sink. There would be dried skins of bologna, coffee grounds, crusts of bread and assorted silverware liberally mixed in the watery bottom. Each morning the hardest job for a newly awakened worker was to dip his hands into this sickening mixture of garbage, cutlery, and crockery. After the stormy night there were only three cups, one plate, one knife, no coffee grounds, no bologna skins. The sink was almost clean.

In the galley, the chief cook started the oil burner for the range. Bloom took the now-cooled loaves of bread to the freezer. He carefully placed them around the perimeter of the chamber on the wooden battens which protected the coils. By mid-afternoon the loaves would be hard frozen, awaiting the need to be thawed for use.

The four-to-eight deck-and-engine watches were now half over. At daybreak the barometer was still falling slowly. The reading at six was 29.40 inches. Wright questioned the wisdom of calling the captain per the literal requirement of the night orders. He decided to defer the call until seven when he expected the glass to be below the pressure Captain Ogilvie had indicated as the basis for calling him. There was no other apparent change in weather. Wind southeast, now force eight, fresh gale, sea and swell high and confused.

Wright estimated the wind to be force eight but would have been the first to admit the difference between eight and ten was hard to tell without an anemometer. Wind in those velocities begs description. Wright was willing to admit it was blowing pretty damn hard!

The mate wondered what he should do about the crew, today being Saturday and normally a day off for the deck gang. The securing done yesterday had been thorough. With footing as difficult as now, any productive work would be out of the question. Still he was reluctant to have only the men on watch to cope with any emergency or unusual situation. He was still pondering the decision when Tanksley arrived.

Wright was a little surprised to see the bo's'n. He had never come to the bridge on a Saturday or Sunday morning since the ship left Baltimore, except for the Saturday the ship had arrived in Los Angeles.

Seeing Tanksley, Wright immediately made up his mind. He would have one watch below and the watch on deck prepare the main deck passages for painting. They would thus be awake and available should any occasion arise where added manpower was needed.

There was little to tell when daylight arrived, and night ended. The lowering overcast was barely above the breaking crests of the tumultuous sea. There was no horizon as such, merely an end to visibility. The narrow limit of sight was close upon the heavily laboring *Joshua Blackmer*. Salt rime coated the ship. Nothing on the exposed decks was dry. The smokestack was caked with crystalline salt coating the warm paint.

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Tom Matthews, reading the barometer at ten o'clock, gave a low whistle at what he saw. He had never seen it so low. He lightly tapped the center of the dial with the index finger of his right hand. The needle dropped another one hundredths of an inch. The needle settled at 29.25 inches. He mechanically set the stationary needle, to assist in a quick read-out of gradient. *No indication,* he thought, *that the glass is going to stop falling. Twenty-two hundredths of an inch since midnight, it's dropped twelve hundredths in the past three hours.* Matthews was more concerned than he cared to show.

The wind, sea, and swell were much the same as when he had come on watch. It seemed to have backed a couple of points into the east southeast, it was still blowing at "whole gale" force ten on the Beaufort scale. Tom noted a very high and mountainous, confused sea and swell, weather overcast with limited visibility. He was uncomfortable with the description and wondered if he should call the captain.

Matthews prepared a zero hour Greenwich weather report for the captain's approval. It was now 2330 GMT.

230000Z FROM JOSHUA BLACKMER DR POSIT 32 N 153.6 E WIND ESE FORCE 10 VERY ROUGH AND MOUNTAINOUS CONFUSED SEA AND SWELL X BAROMETER 29.25 GRADIENT .04 FALLING X OVERCAST X COURSE 270 SPEED 8.5 KNOTS

Ogilvie read the message when he returned from the saloon, corrected the speed to 7.5 knots, and walked across to the shack, giving it to Baker for transmitting. Baker was busy copying traffic. Ogilvie went to the bridge where he observed the weather with deepening concern.

At a few minutes after eleven, Baker finished copying the special weather schedule and delivered the message to the captain still on the bridge. Ogilvie, still in great physical pain was brooding about the worsening weather and his own condition. He glanced at the message, thanked the radio officer, then went into the chart room to plot the storm center and ponder his future action.

He read the text of the message again.

MASTER JOSHUA BLACKMER 2223102 X REPEAT OF 221500Z TROPICAL STORM WARNING X QUOTE WEATHER ALERT 221200Z X LOW PRESSURE AREA ESTIMATED CENTER 23.5 N 150 E MOVING WEST NORTHWEST SPEED TEN KNOTS X BAROMETER AT CENTER ESTIMATED 28.70 FALLING X WIND VELOCITIES TO 85 KNOTS WITHIN FIFTY MILES OF CENTER FRESHENING UNQUOTE

Ogilvie transferred the position of the storm to the track chart upon which the ship's position was plotted. He next plotted the track of the storm and stepped off along this track

a hundred and thirty-five miles. He made a small pencil dot with a small circle around it labeling this position "Est. Storm Center 1200 LAN." This showed where the storm might be at noon ship time. Next he plotted the ship's noon DR.

He considered several possibilities. If the storm continued west northwestward and at the same rate of speed, the ship and storm center would be coincidental sometime late tomorrow. Should the storm accelerate to, say fifteen knots, and curve northerly the tracks might cross as early as noon tomorrow. If, however, the speed of the storm increased to twenty knots and *if* the track recurved toward the eastward, the intersection of the tracks could be early Sunday morning.

One fact became painfully clear, under any circumstance the ship would be at the center of the storm within the next twenty-four to thirty hours! And what if the estimated position was wrong?

It was time for a decision.

A suddenly sharp pain clouded his thoughts for just a moment. When the pain subsided, Ogilvie decided to await the next weather report before committing himself. He should have that message by 1400 ship time at the latest. He would make his decision then when he would have all the latest information before him.

On his way to the saloon for an early lunch he stopped by the shack to order Baker to be sure to copy the 0300 Greenwich weather.

Discussions over, decision made, ship slows and turns away from storm

NINETEEN

THROUGHOUT THE SHIP most conversation centered upon the weather. Usual limitations on topics of interest for discussion were further limited by everyone's preoccupation with the steadily worsening state of wind and sea. Depression accompanying the low atmospheric pressure, the close confines of the now stuffy quarters and the lack of recreation had shortened tempers.

Small blow ups between individuals, even the closest of friends, became the rule not the exception. Even the Poet and Curly were heard in an angry exchange. Poet was heading for the galley to place an order when Curly, with an order, entered the messroom.

"Watch where the hell you're going, stupid," shouted Curly, regaining his balance and saving the stew from spilling.

"Who are you calling stupid?" countered Poet. "You're not so bleepin' smart!"

This angry exchange between the two good friends was a surprise to the few men who heard it. Others had similar experiences. The ship's cohesive threads were fraying.

The noon meal was in distinct contrast to the terrible breakfast. The beef stew prepared by the galley crew was delicious. Large chunks of beef in a thick rich gravy, quartered potatoes cooked to a tender mealiness and all surrounded by several varieties of vegetables. The stew satisfied every taste and was rich and nourishing. Fresh bread to sponge up the last of the gravy climaxed the meal.

In spite of his preoccupations, pain and the weather, Ogilvie resolved to speak to the steward and compliment him on the meal.

Other officers entered and left the saloon, their conversation quietly subdued in deference to the captain's obvious concentration.

Corwin provided the only break in the seriousness of the meal. He brought a large sponge into the room which he taped to the corner of the table on which Ogilvie had that morning nearly impaled himself.

Captain Ogilvie noting what was happening gave Corwin a sickly smile, saying facetiously, "Do you always anticipate trouble that well, Corwin? That's a few dollars short and a hell of lot too late. I've got square bruises on round balls to prove it!"

Corwin laughed, "Ah'm shuah hopin' to pertect mah own manhood, Cap'n, suh. Shuah sorry abaht yores, shuah sorry abaht yores. But that ain't no cause fo' anyone else to have his family jewels crushed, is it?"

"No, it sure isn't," smiled Ogilvie, "just wish it had been someone else who had the danger 'pointed' out. Maybe the sponge is a good idea!"

No one else participated in this exchange, though some of the others seemed to be wiping their mouths with their napkins more frequently than usual. Silence returned to the tables and Ogilvie resumed his thoughtful deliberations.

He sat at the table after finishing his bowl of stew and mentally sorted, sifted, considered and rejected many of the options open to him. He weighed means and methods for heaving the ship to if this was the course he chose. Should he speed up and try to cross ahead of the storm? What would happen if he failed to cross the storm track? Was there any alternative to heaving to?

The responsibility for any decision made was Ogilvie's and Ogilvie's alone. He would answer for the consequences whatever they were. His decision might result in saving the lives of the crew, the cargo and the ship itself. It might just as well result in the loss of the vessel, its cargo and the lives of the crew, including his own.

Long accustomed to the demands of command decision, Ogilvie was concerned only with the results of his decision. After the decision was made he would abide by it and accept the consequences of his act. So must all others. No man is ever more alone than when he decides to risk the lives of his fellow beings. George Ogilvie was alone.

He was almost certain he would attempt to heave the ship to, head into the wind. The "book" said "with the wind close on the starboard bow." This meant on a course almost diametrically opposed to the one the ship was now steering. He could come to this course either by turning the ship to the right, or to the left. His thoughtful concern was now directed toward which of these maneuvers would offer the best advantage. Here he made an error in judgment. An error that could cost him his ship, and the lives of all on board.

Ogilvie knew that approximately half way to the new course, whether the turn was made to the right or left, the ship would lie in the trough of the sea where she could be overwhelmed. At this point, continuing the turn would become very difficult if not impossible. His instinct told him a turn to the right would be the easiest to accomplish. The more he considered the problem, the more his judgment told him to reject the turn to the right in favor of turning left. His instinct was right. He should have decided to turn right.

He based his decision on the possibility of getting into the trough of the sea and hanging there. If this happened when the ship was on an approximate heading of North and the ship making seven knots or so, she would lie on the path of the storm. She'd be ahead of the center with the storm making greater speed than the ship.

If, however, he turned left and the swing stopped with the ship headed south he would parallel the storm track. She'd be short of the center and in an opposite direction to the storm.

His reasoning was unsound being influenced in part by the hurt from his bruised testicles. His concentration was spotty and his thoughts ignored a basic premise of the "Law of Storms." Later, much later he would realize his error.

In considering his alternatives, Ogilvie felt the turn to the left would give the ship the greatest chance for escape. When the time came to heave-to, he would turn left!

Having made this decision, Ogilvie began thinking of how best to execute the turn. He knew and understood the problem of turning against the combined forces of wind and sea. He was also painfully aware of the difficulty of steering a Liberty ship at speeds of less than forty revolutions per minute, about seven knots.

At slow speeds it was difficult to build enough swing to overcome the force of either the wind or the sea.

If the swing was too rapid either due to an excess of rudder, or too much speed, considerable damage to the ship might result. It was the old problem of irresistible force and immovable object. The sea, mountainous and terrifying, was the immovable object. The ship, building inertia in a rapid swing, would be the irresistible force. This was the classic confrontation he had no way to avoid. He *must* keep the swing moderate and controlled.

He remembered a similar situation, low speed high winds and sea, he had experienced during World War II. Overcoming that problem had required complete cooperation by the chief engineer. It would require the same degree of understanding this time.

He turned to MacIvor saying, "Can you come to my office at about one o'clock, Mac. There are a few things I'd like to discuss with you."

"No sweat, Skipper, I'll be there," the chief ansered cheerfully.

Ogilvie next addressed the mate and first assistant, "I'm fairly certain we are going to have to heave to. If we do there will be a period of time, can't tell how long, that the ship will be in the trough of the sea. We're liable to roll our guts out: Anything that is not secured is bound to get thrown about. Someone might get seriously hurt. Material can get smashed. Hell, you've got imagination. Check all the quarters, officers' and men's and see that the ship is secure. I mean secure with a capital 'S.' If you have any questions, ask them now, not after we get into the soup! And, make no mistake, we are going to get into the soup."

"How violently do you think we'll roll?" asked Wright.

"Christ, I don't know, mister," Ogilvie answered angrily, "my guess is double or triple anything you've ever experienced."

"Yo' just ain't a whistlin' Dixie, Cap'n, no suh, y'sho as hail ain't," said Corwin, "hurrycain Ah was in back in twenty-six, Ah ain't seen it so rough befo' or since. Ah damn neah quit goin' to sea aftuh that one. Do y'all know that theah ship rolled so hahd we didn' known whethuh to walk on the decks or on the bulkhaids. Lawdy me, Ah ain't nevah been so scairt in all mah life. Yo' don't mean to say we's goin' t'have that kind o' weathuh heah on this ship?"

"'Fraid so, First," answered Ogilvie, "now you two had better get along and see that everything, and I mean everything, in the quarters is secured. Be damned sure you put anything on deck that is likely to fall there in heavy rolling. When you get it on deck secure it so it won't slide all over the damn place, hitting and hurting someone or something. Let me know when you are through and are satisfied."

Both men acknowledged the order and Wright volunteered, "Think we'd better warn the men, Captain? You know, careful in their movements and 'one' hand for the ship and one for themselves'?"

"That's right, John," answered the captain, "except if they need both hands for themselves it's 'to hell with the ship'!"

MacIvor said thoughtfully, "It'll make it less of an ordeal if we have no injuries."

"Ordeal it will be, I'm afraid," said Ogilvie, "but if no one gets hurt it might ease the strain a bit. One thing I'm sure about, it's going to be a day we won't soon forget."

Corwin and Wright, deciding to work together for greater efficiency, left the table together. As they left, Ray Bloom entered the saloon.

Ogilvie immediately said, "Steward, the stew was excellent, very tasty. I must say it was quite an improvement over whatever that was we had for breakfast this morning. Please compliment the cook for me."

There were several officers in the room at the time, thus Ogilvie was able to praise in public after he had criticized in private. A ploy he found fair and just when handling men.

He repeated his admonition to have everything adequately secured without undue delay. "And, Mr. Bloom," he continued, "I don't want a repetition of those broken plates of the other night. Have the messmen secure *everything* in the racks, and you make a round and satisfy yourself it has been done properly! Understand?"

"Yes, sir!" said Bloom, and after checking with Parsons, left the saloon to pass the orders on to Baum and Arthur, the crew messmen.

MacIvor went directly to his room after finishing lunch. There he conscientiously followed Ogilvie's suggestions regarding preparations for heavy weather. First, he locked every drawer for which he could still find a key. For those he couldnot lock, he folded small wedges out of paper, jamming the paper wedge between the edge of the drawer and the side of the opening, hoping that friction would keep the drawer from sliding open.

He took a piece of twine from his desk and lashed the knobs of the bookcase doors together. He placed his old and well-travelled typewriter on the deck, being careful to line the roller up fore and aft. He opened his stationery locker and carefully moved the spare supplies of ink and glue, and other liquids to the lower shelves, jamming a spare blanket into the void space to keep these articles secure.

Securing his sleeping room in a like fashion, MacIvor finished by securing his clothes locker. Here he brought all of the hangers together in the center and lashed them with a small piece of twine. Next he wrapped a piece of twine around the hanging rod to keep the hangers from moving along the rod toward the ends. He had lost enough clothes, he thought, through chafing on closet walls during periods of rolling. He then took a spare pillow and blanket, and cushioned the model locomotive to keep it from damage.

Finally he was satisfied, completing his preparations by capsizing his office chair. With the remainder of his twine, he lashed it to the legs of his desk. The desk was fortunately secured to the bulkhead and would not move unless the bulkhead came adrift. At one o'clock, his room and office secure, MacIvor went to Captain Ogilvie's office.

The captain was on his hands and knees busily completing the securing of his room and office. Ogilvie had used almost identical methods as those used by MacIvor. However, he had not lashed the doors of his bookcase together, feeling apparently that he might wish to refer to some of the volumes stowed there. He also had not yet capsized his office chair. He indicated a seat on the settee for the chief and seating himself, swiveled around and faced MacIvor.

"We're going to heave-to in a short while, I am sure," he began, "with the strength of the wind and the height of the sea it's going to be a damn difficult action. Damn me, I'm not even sure it can be done."

"Is it absolutely necessary, Cap?" asked the chief.

"Yes, we've got to try it, Mac. I don't know, maybe I shouldn't have waited so long. But I'm still not sure where that damn storm center is. We could have lost days on the voyage if I'd anticipated the actual need for taking avoiding action. Hell, you know Murchison isn't paying either of us for chasing a will o' the wisp. We're paid to move pig iron filled with cargo from port to port."

"Sorry, Skipper," said MacIvor, "I know what a strain this puts you under and I know you've thought it out with thoroughness. What do you want from me?"

"Once, during the war, I had a similar type of problem. These damn Liberties don't steer worth a shit at less than

forty revolutions, you know. That's about seven knots engine speed. If we can get a swing on her we can keep the swing going at forty revs. The only trouble I found before was when a gust of wind, or the force of a large sea hits, then the swing stops. Right now. Stop, and dammit if the sea or the wind has enough force, the swing reverses."

"You say you had the problem before, any way to overcome it?"

"The other time we were crossing the North Atlantic, Gibraltar to Hampton Roads, right into the teeth of the westerlies and the ship was dead light. Every time we'd put the bow above the sea, the wind would try to blow us around and into the convoy. It was real hell for a while until the chief and I worked out a means for fighting it. We throttled down to forty-five revs, just over bare steerage way. I put the bridge telegraph on 'half ahead.' When the swing from the wind started, at the very instant it started, I would order 'full ahead' on the engines and put the wheel hard over against the swing. The chief would give me full engine thrust and the rudder would be effective. As soon as the swing stopped, back we would go to the 'half ahead.' The rudder steered normal and the engines would be allowed to forty-five revs again. We rode that damned tightrope for almost thirty-six hours and never once lost control.

"Must've bleepin' near lost your chief though, I'd imagine," laughed Scotty.

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It was one forty-five when Baker brought the 0300 GMT weather to the captain's office. This message showed the estimated position of the storm center for 0000 GMT, less than four hours ago. The position was 26 N and 149 E with the storm moving north-northwest at a speed of fifteen to twenty knots. The barometric pressure at the center was estimated to be 28.50 inches.

Ogilvie had never seen a lower glass reported. He hadn't even heard of such a low pressure. The next word in the message, "falling," worried him. Wind at the center of the storm was estimated to be in excess of one hundred knots and within eighty miles of the center.

Within fifty miles of the center it was estimated to be in excess of one hundred and fifty knots. *A well defined typhoon,* thought Ogilvie, *and a big one.*

Ogilvie reread the message thoughtfully. He knew Baker had correctly copied the message. He looked at the numerals again. His every instinct told him they were right.

He walked across the ship to the radio room and asked Baker, "No mistake on any of these numbers, Sparks?"

"No, sir," replied the radio officer, "I asked the sending station for a repeat. You know, on a message as important as this they always transmit each group twice. That's a matter of routine. I knew I had copied correctly but asked for a repeat anyway. Those are the numbers, Captain, so help me."

"I know, Sparks," said Ogilvie, "just a drowning man clutching at straws. You haven't heard any other ships around us have you?"

"Heard a passenger ship clear Yoko for Honolulu last night, way to the north of us. And there's some traffic around

the Philippines and the China Sea. Nothing anywhere near us that I've heard."

"Well you'd better listen real good for anything near us. I'll have Mr. Visser give you regular position reports for the next twenty-four hours. If you hear another ship close by you can at least tell him where we 'think' we are!"

The last chance that the weather message had been in error now removed, Ogilvie knew what decision he must make. He must bring the ship about and heave to.

Ogilvie compounded his previous mental error. He made the same error for the second time. One man on board, Bill Tanksley, with twenty years of sailing ship experience had the knowledge and expertise to recognize the error. He would say nothing.

Ogilvie took one last look around his office and stateroom. He wanted to be sure everything was secure, but his mind was on the forthcoming turn and on the now persistent pain in his groin. It was not on the importance of securing his rooms. He did *not* put his wide carriage typewriter on the deck, nor did he capsize and lash his chair. He put the typewriter on the short settee, he left the chair in the kneehole of the desk. He closed the porthole over his bunk. The wind would eventually be from the starboard side, he hoped, and spray or rain could enter the room through an open port.

He took a raincoat from his locker, carefully closed the door, put his cap on his head and went to the bridge.

The trough that was foremost in Ogilvie's thoughts is the valley occurring between two adjacent seas. There was no way he could avoid passing through the trough between the course he was steering and the course he wanted to bring the ship to.

It was not passing through the trough that concerned Ogilvie. It was the fear of becoming disabled while in the trough that frightened him.

With wind and sea of such force and magnitude he knew they would encounter, a powerless or disabled ship could be over burdened, overwhelmed, even capsized under such circumstance. This possibility was what was frightening to the worried captain. There was no margin for error, and little or no chance for survival for the ship or the men aboard if power failed during the turn.

An overwhelming sea, he thought, *the ship upright one moment, then, in an instant gone without trace.* He shuddered. There was no other way. He must chance it.

Entering the wheelhouse, he went to the sound-powered telephone, put the selector switch to "engine room," and rapidly turned the call crank.

The tinny voice of the second assistant came through the receiver, "Engine room, Second speaking."

"This is the captain, we are going to put the telegraph on 'standby.' Please notify the chief engineer, and ask him to call me when he is in the engine room."

Hanging up the phone Ogilvie turned to the second mate, "Put the telegraph on 'standby,' Mr. Visser."

"Standby the engines, sir," said Visser, as he swung the telegraph handles bringing the bridge pointer to the legend 'standby engines.' Almost immediately the inner pointer on the dial swung in a long arc and came to rest opposite the bridge pointer, accompanied by the clanging of the telegraph bell.

"Engine room answers 'standby,' Captain," said Visser.

"Thank you," Ogilvie said, absently, his mind still occupied with many other thoughts.

He went to the starboard wing of the bridge, staring at the translucent horizon between the rain and the sea. His guts were tight as a fiddle string, and his nuts not only ached, they seemed aflame with pain. He could feel the tension building within his body and he subconsciously hunched his shoulders against the nervous chill he knew was coming.

Thirty-eight lives, damn. He felt a single drop of cold sweat start down his spine from the base of his craning neck. He shivered. Christ, when would he be able to relax? He said a silent prayer.

It had been years since Ogilvie had prayed and he wondered if God had heard him. He knew he must give the

command that would decide the fate of the ship. He wished he was in another line of work. The muscles in his buttocks tightened and he raised on tip-toe. A sharp pain slashed across the tightened muscles of his hunched shoulders and he swallowed hard to stop the nervous nausea.

The shrill bells of the telephone interrupted his self-pitying thoughts. "Hello, bridge, second mate speaking," he heard Visser answer.

Ogilvie thrust aside his moody reflections. He recognized that, right or wrong, the decision he now made was one he had been trained all his life to make. He had regained his self-confidence by the time he heard Rudi Visser say, "Thank you, Chief, I'll tell him." Then turning to Ogilvie who was reentering the wheelhouse, "The chief engineer is in the engine room and reports all ready for maneuvering speeds."

"Very well, ring 'half ahead,' please."

Visser rang the telegraph and waited for the answer from below. "Engine room answers 'half ahead,' sir."

"Call the engine room, Mr. Visser, no, never mind, I'll call," Ogilvie said. "I want to talk to the chief." He went to the telephone, lifted the headset and swung the call crank.

"Engine room, Second speaking."

"This is the captain, is the chief there?"

"Just a minute, Captain," there was a pause, then the voice of MacIvor.

"Chief speaking, is that you, Captain?"

"Yes, Chief. I forgot to ask if these maneuvers, that is changing speeds the way we discussed, will that have any effect on that bad bearing? I don't want to make your problems any worse."

"No," answered the chief, "that shouldn't have any effect. I don't think any damage can occur unless the wheel comes out of the water and she starts to race. Not likely at this draft, is it?"

"Okay, Chief, thank you. I did wonder. Let me know when the engine speed is down to forty-five revolutions, will you?"

"She's turning just about forty-five now, Cap," answered MacIvor. The captain thanked him, hung up the phone and turned back into the wheelhouse.

Wright came into the wheelhouse and reported, "We just completed our inspection of all quarters, Captain. Everything is secure!"

"Very well, John, thank you," Ogilvie said absently.

"Anything else I can do?" asked Wright.

"Nothing much any of us can do now," said the captain. "Why not get off your feet for a couple of hours. You go on watch at four, don't you?"

The ship's motion became heavier with the reduction in speed and the sensation of planing stopped. Ogilvie thought of the motion as wallowing. The lift of her stern, the result of reserve buoyancy kept the seas from breaking over her stern. The constant threat of boarding seas remained alarming.

Ogilvie could no longer afford the luxury of reflection, the time for action had come. He took a deep breath, exhaling slowly.

"Left twenty degrees rudder," he ordered, "give me a mark on each five degrees and sing out on the even tens with the heading!"

The die was cast.

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On the bridge, the helmsman's voice was devoid of expression, "... Mark ... 210 ... Mark ... 200." The wheel had been eased to five degrees left rudder when the ship had attained a good swing. Now the swing was slowing down. The helmsman spoke, "She's barely swinging, sir!"

"Thank you," said Ogilvie, who had been noticing the greater spacing between the helmsman's calls.

Before the heading reached 195 the helmsman shouted, "She's swinging right, sir. The wheel is hard left!"

The ship lay directly in the trough of the sea, rolling deeply and heavily. It was not time for hesitation.

Ogilvie ordered, "Full speed ahead! Mind your helm and let me know when she starts swinging again!"

Visser swung the telegraph handles through a short arc leaving them at the "full ahead" position and reported when the engine room answered.

"Mind the helm, sir," repeated the man at the wheel. "Now heading 208."

"Watch her head and let me ..." the captain was interrupted by the helmsman. "Swinging left, sir, 205 ... 200 ... Mark ..."

"Half ahead engines, ease to ten degrees rudder," ordered Ogilvie. There was a jumble of clanging telegraph bells and the voices of the second mate and the man at the wheel repeating the captain's orders. The wind and the sea playing an awful counterpoint to the weak human sounds.

Ogilvie's fascinated attention was focused on the bow of the ship, swinging inexorably left and into a mountainous approaching swell. Nothing could prevent this monster breaking on board and destroying every fitting in its path.

Horrified he watched. Just before it seemed the end had come, the ship slowly, and with a heavy grace, rolled slightly away from the onrushing wall of water. As the ship rolled, it also lifted and the terrible threat passed safely beneath the laboring vessel. Ogilvie started to breathe again.

That was close, he thought, *too damned close.*

The ship passed over the crest of the gigantic swell and commenced a deep roll to port. Ogilvie gripped the wooden handrail on the forward bulkhead of the wheelhouse, his knuckles white, his fingers making an impression in the wood.

Christ, the next sea has *to crash on board,* he thought. Then in response to his fear, he ordered, "Wheel amidship, lively now!"

"Midships, sir," repeated the helmsman, turning the wheel one turn to the right.

At the bottom of the trough the ship again rolled first easily then deeply to starboard, the swell passing harmlessly under the ship as before.

When the bow rose above the crest of the next swell it was exposed to the gale force of the wind. Wind was now blowing

tops off the swells, wind that was absolute in its fury, wind that caused the heading to swing to starboard.

"Swinging right, sir," shouted the helmsman.

"Left rudder, man, left rudder. Lively now," ordered the captain.

"Left, sir," repeated the AB non-plussed at the variety of wheel orders. *Why the hell didn't the Old Man tell him what he wanted and let him do the steering? This reacting to the skipper's reactions wasn't goin' to work for a shit. The Old Man must know that.*

Ogilvie knew the present system was never going to work. He was tired already and he had been on the bridge for less than two hours. He was tense and his nuts were hurting. He couldn't rely on keeping alert for all of the many hours he could see stretching endlessly before him. He would have to explain to each man who came to the wheel what it was he was trying to do, how he intended to do it and leave some of the detail up to the men who were actually doing the work.

As he wondered how to express himself, he watched the boisterous and tumultuous sea through the small wheelhouse window. He felt alone and strangely isolated. He heard the movements of the men behind him. He wondered what they were thinking. Did they believe he had the skill and the knowledge to deliver them from a sea gone mad? Did *he* think he could do it? Nothing would be done unless he, George Ogilvie, ordered. Would his orders be the right ones? Doubt assailed him. He shrugged his shoulders, sighing to himself, "Only time will tell!"

He turned to the second mate, "Mr. Visser, we have a definite problem in bringing the ship into the wind. We must keep left swing on her except when the danger of boarding seas is acute. You, Helmsman, will have to judge the swing so it does not become too fast to control. The wheel should be amidships, even a small amount of right rudder when the ship is below one of these mountains of water. With the ship at the top of the swell the wind may take charge. Then she'll want left rudder to keep the swing on. I must know when the swing slows, with a reasonable amount of rudder. Then, Mr. Visser, we'll put the engines 'full ahead' to get greater thrust against the rudder. Do you both understand?"

The big Dutchman, quietly competent, merely nodded. Then realizing that Ogilvie had turned away he said, "Yes, sir, it will need much concentration, but I am sure it will work. If anything will," he added, half under his breath. Ogilvie did not hear the doubtful thought.

"I understand, Captain, you want a slow but steady left swing, but no swing if the ship is about to take a sea aboard to port?"

"That's right, Quartermaster."

"Well, I'll do the best I can, Captain. But I can't see the sea through these small bleepin' windows. I'll have to tell from the 'feel' of the ship in my feet."

"I know," said the skipper, "just do the best you can. I'll try to help if I think the swing is too fast!"

For the next several seas the helmsman attempted to maintain a constant swing through varying the angle of the rudder. Ogilvie noted the swing was nearly lost on some occasions, on others the rate of swing was dangerously fast. Reaction to the forces acting on the ship by the helmsman seemed too slow to be effective.

He spent a few moments in deep thought. Then, "Let me know when you either increase or decrease the rudder angle," he ordered.

"Yes, sir," acknowledged the man at the wheel.

"How is the rudder now?"

"Twenty degrees left, swing is stopping, sir. Thirty degrees left!"

"Full ahead," ordered Ogilvie. "Ease your wheel when the swing picks up again and sing out," he ordered. He sorted out the responses to his orders, the clang of the telegraph bell and the all pervasive sounds of the storm.

The swing increased and the helmsman reported easing the wheel. The engines speed was reduced to "half" then increased to "full," and the entire procedure was repeated again and again.

The progress toward the new course, rapid now, then

again with no apparent gain. And all the time the ship rolled. It rolled the guts out of every living being aboard. The determination of the ship's fate was agonizingly slow.

The captain found himself gripping the handrail, trying by pure physical strength to turn the ship. *God,* he thought, *why doesn't she turn? Why the hell doesn't she turn?* He felt he was losing control of his thoughts and emotions, and struggled to regain his control.

The "book" by Bowditch gave instructions on how to maneuver in tropical storms. Hell, there was a whole chapter on this important subject. Wasn't there? What did it say? If only he could remember, even a paraphrase of the theory. *Damn!* The appropriate passage said in effect, "If in the dangerous semicircle ahead of the storm, bring the wind close on the starboard bow, sailing ship close-hauled on the starboard tack and make all possible speed."

Wasn't that what he was trying to do? Unlike a sailing ship, he had twenty-five hundred horses in the engine to assist him, didn't he? What the hell did a sailing ship have? And then he knew! He realized his mistake.

What the hell had he been thinking of? A sailing ship could never come about from running free on the port tack to close hauled on the starboard tack in a wind like this. Any sailor worth a damn would know that! With no power but sail a sailing vessel would "wear" around, the wind crossing the stern. Christ! How could he have been so stupid?

Reflecting further, he remembered that a square-rigged vessel "close hauled" had the wind on the beam or at most a point or two forward of the beam. Through his abysmal ignorance he had managed to get his ship "close hauled" on the port tack. A course calculated to bring the ship into the storm center.

Ogilvie now knew what Tanksley had known hours before.

The watch had changed while he was deep in thought. He heard Wright's voice, "Captain Ogilvie!"

"Yes, Mr. Wright," he answered.

"The steward is unable to keep anything on the range, says he's going to serve sandwiches for supper."

"I guessed as much, John, I guessed as much," Ogilvie said absently. "How's the heading?" he asked of Mason, who now had the wheel.

"One sixty, Captain," responded Salty, "and slowly swinging left, wheel's hard over."

"Engine's 'full ahead,' sir," reported Wright, anticipating the skipper's inquiry.

"Very well," said the disturbed captain, "don't let her get too much swing, Mason! And watch that engine speed, John. We just control the swing and the speed."

The light of the sun could not penetrate the heavy overcast and it was rapidly darkening around the ship. Visibility was nil. Rain, spindrift, and spume blotted out all but the most prominent close-at-hand objects. The craggy seas, their foamy breaking crests blown into hundreds of blinding drops of spray, and white streaks of froth etched in parallel lines on the downwind sides, continued to intimidate the plunging, rolling ship. Streams of water continually ran down the windows. The lookout in the starboard wing crouched low behind the dodger seeking any comfort he could find, any surcease from the driving wetness and the howling wind.

With all the water that's around, thought George Ogilvie, *how can my mouth be so dry?* He tried to swallow but there was no saliva. His mouth tasted as though it were full of dry and powdery cotton. He walked to the wing, faced into the gale and opened his mouth. It was instantly filled with a gush of wind-born salty spray. Oglivie gasped, closed his mouth, and eagerly swallowed. The dryness was gone, for a moment only.

"Think I could have a cup of coffee?" he asked the mate.

"The ordinary was trying to make a pot when I came on watch," said Wright. "I told him to bring you a mug when it was ready."

"Thanks," said Ogilvie, "I've got to wet my whistle, watch her while I go into my room for a drink of water."

When he returned to the bridge it was noticeably darker.

There were occasional lightning streaks far on the starboard bow, an indication, Ogilvie thought, of the location of the storm center. Ahead and to port there was the ominous darkness of an impending squall.

There was a murmur of voices and Wright said, "Here's some coffee, Cap."

He took the thick china mug and eagerly drank some of the hot brown brew, burning his tongue in the process. *Nothing*, he thought, *like a streaming cup of shipboard coffee! Nothing like it to sour your stomach*, he thought, as the hot liquid passed his tongue, burning his throat in the process, and arrived in a stomach taut from the hours of nervous tension.

The method of maintaining the swing of the ship's head had become, like so many other things, routine. In the crest of a swell, hard left rudder and full ahead on the engines. In the trough, ease the rudder and half ahead on the engines. Or, with the ship rolling starboard, more left rudder, full ahead engines. Midship and half ahead before a roll to port. It was monotonous, thought Ogilvie, would it work? Damn it! It had to work. Because of his blunder there was nothing left to do except what he was now doing. It had to work!

As the bow inched toward the wind, the rolling decreased slightly and the pitching increased its tempo. The rolls, though less frequent, were as deep as before. Forty-five degrees or deeper to starboard. To port between thirty-five and forty. And with each roll, the creaking and groaning of metal and wood complained of stress induced by the violence.

It was almost impossible to stand on the deeper rolls to starboard. Hands clawed for some permanent member of the ship's structure. Shoulder muscles ached from the strain of maintaining balance. Leg muscles cramped from the constant shifting of weight. Ogilvie with a visible horizon for comfort, wondered how the men below were faring.

In the quarters, with no visual reference, it was difficult, nay impossible, to stand. Most of the men had retired to their bunks, taking 'an equal strain on all parts' rather than continuing the effort for insecure footing. A few, more hardy than the others, attempting to keep the appearance of normalcy had given up after attaining a few bruises.

On the main deck, Radio Kowalski doggedly tried to keep working at his afternoon chores. No one had thought to tell the troubled messman that he could knock off. So Kowalski fought to keep his footing while swabbing the deck in the starboard passage.

"That last fight kinda knocked me a little silly. M'manager said th'bum couln' hit. Where'd dat crazy manager get off to? He promised me a comeback, then beat it. Damn floor won't stay flat, sure musta got his pretty good. Where'd ever'body go? Th' sergeant said he'd give us back our shoes, so's we c'd go to town. Hope we get s'm pay before we h'v t'go off base. Damn, wish th' floor of the ring w'd stay still. What's the count? Somebody tell me the count! How cum I'm d'only one's workin'?" In his mixed-up mind Kowalski was flipping between memories of his days in the ring, those unfortunate years in the Spanish Foreign Legion, and his most recent memories of service on board the *Joshua Blackmer*. He was a living humanoid programmed to work a number of hours each day, eat at regular hours and sleep the rest of the time.

Below in the engine room, MacIvor, Sylvestri and the oiler and fireman who had come on at four, were getting a workout. Answering the telegraph, they opened and closed the throttle in the engine room while the fireman pulled or added fires to meet the demands of the engines.

The speed of the engines was varied according to the orders received from the bridge. There were fewer periods of increased speed. For the most part the engines remained at the slower revolutions with the telegraph on "half speed ahead." The fireman was constantly alert to the demands of the telegraph. Adding fires, increasing steam when "full speed ahead" was signalled from the bridge. He pulled fires when the telegraph pointer returned to "half speed ahead."

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As the end of another watch approached on the bridge, the only face that hadn't changed was that of the skipper. Despite his earlier mistake in procedure, Ogilvie was now doing a superb job of bringing the ship into the wind. At eight o'clock there still were several points to go. Another forty-five degrees before crossing the wind, and the swing had slowed to a snail's pace.

We'd be out of this nightmare, thought Ogilvie, *if I had turned right instead of left.* His lips moved as he uttered a silent prayer, "God, give us your blessing and permit us to escape destruction in this tempest, please God, don't punish my men for my shortcomings."

The wind had again increased in force but had backed into the east-southeast, closer to the ship's head. Ogilvie was grateful for even this small favor.

He estimated the wind velocity to be in excess of one hundred knots. He had no way of judging a force this great never having experienced anything even approaching it in the past. There was one hell of a lot of wind he knew. *It must be more than one hundred knots.* He remembered the last weather report and realized the ship was much closer to the storm center than before.

The sea was confused but the underlying swell was nearly the same as the wind direction. The swells seemed shorter, coming from four points on the port bow, but they were precipitous. He realized the ship had passed through the trough of the swells. At least that danger had passed.

There had been no twilight because of the heavy overcast. Just before dark the squall that had been threatening all afternoon had struck the ship. Any visibility there had been had vanished. The ship was engulfed by water. The roar of the wind was subdued by the rattling roar of the torrential rain. The lookout, drenched to the skin despite his oilskin outer clothing, huddled and shivered in the chilling blasts of wind and rain.

While the captain's struggle to bring the ship across the wind continued, the dreadful cacophony of the storm reached screeching heights. Rain rattled on the deck above like the beat of a thousand snare drums. Wind, whistling through the shrouds and stays and the other rigging had the wild sound of a gigantic and magnificent string section. The deep-throated whistle of wind under doors melded with the howl as it whined around corners sounding like fifes playing counterpoint to a section of brass. The low-pitched moan of wind passing through partly opened doors, pinched through the rungs and the rails of ladders carried the melody like woodwinds. The complaining groans of grinding steel were a giant cello section of bows drawn against complaining strings. The creaking of wooden partitions and joinery work were a fiddle section gone mad. And overall, the rhythmic slapping of loose canvas, the lifeboat covers all out of rhythm and the overhead crash of thunder made the mightiest of symphonic tympanies pale in comparison.

It was such an awesome experience, the participants would not become aware of the components of sound they witnessed that night until long afterwards. Even then, the recollections would be incomplete, lacking the grandeur of the total experience. None, except perhaps Ogilvie, would be capable of recalling the whole dreadful symphony. Only in its several separated parts would the storm song survive.

The libretto of the awful opera was the continuous passing of orders. It continued in the repeated orders, and the constant repetition of prayerful entreaty by the participants in

the drama that was being enacted within the narrow confines of the wheelhouse, and the bowels of the ship below.

The choreography and stage movements were determined by and governed by the awesome and violent moves of the ship. A devilish terpsichorean fantasy availed that made efforts to maintain balance, a clumsy ballet.

And always leading was the slowly swinging ship's bow. It advanced toward the desired heading with agonizing slowness. Each five or ten degrees, so painfully gained, was quickly minimized or destroyed when the bow swung back to the right seven or eight degrees. The gain of one degree, the three hundred and sixtieth part of a circle, was a major accomplishment. One degree—one miserable degree could evoke cheers of joy or, the loss could cause groans of despair.

The painstaking effort continued unabated despite the heartbreak of never getting closer to the wing. It seemed less and less likely that the goal would ever be reached. And seemed such a simple goal. Just head into the wind. Patience was the watchword, and Ogilvie forced himself to be patient. A loss of patience might cause the ship to swing too rapidly with the possibility of heavy damage, even total destruction.

The watch changed again at eight. John Wright asked, "Anything I can do for you, Cap?" before he left the bridge.

"Nothing I can think of, John," answered a tired Ogilvie. "Thanks for asking, though."

Wright would make a round of the quarters before turning in to satisfy himself that the ship was as snug as could be for the night.

Falling glass and increasing winds makes storm's nearness apparent to all.

TWENTY-ONE

THE TORRENTS OF RAIN were blown nearly horizontal by the tremendous force of the wind which also blew the tops off the mountainous seas. The blown spume mingled with the fresh rain water. The lookout had to be brought into the lee of the wheelhouse because flesh could not stand the shotlike impact of rain drops driven by such fury. With windows and ports rendered opaque by the streams of water coursing over their surfaces, and with no lookout, the ship was blind.

Reluctantly Ogilvie ordered the international signal for reduced visibility blown by the ship's whistle. Reluctantly for he knew that in the tempest of wind no one, not even the men on his own bridge, would hear the pitiful blast of the *Blackmer*'s whistle. It was a waste of steam and the fresh water that went into the generation of that steam, but, the law was the law and it must be done.

It had been difficult during daylight, or the dimness that had passed for daylight, to coordinate the helm and engine orders. With the coming of total darkness and the blinding rain squall, it was impossible. There just were no visible points of reference and he now must rely on his "feel" of the ship.

Like every seaman of moderate experience, Ogilvie could tell a lot about the vessel's movements through the motion felt through the soles of his feet. He did know that reaction to feel was not as rapid as the reaction time of sighted changes. This lag in time would no doubt affect the efficiency of his varying of speeds and rudder angles. He also recognized the inevitability of mistakes and hoped none would be serious enough to jeopardize the safety of the ship.

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With the ship completely engulfed in the storm like a chrysalis in a cocoon, Ogilvie thought he could see the total dimensions of the tempest. It was not bounded by the conventional dimensions of height, breadth, and depth, it was not even bounded by the five senses of hearing, seeing, feeling, tasting, and smelling. The ultimate boundaries were life and death.

He could see the length, breadth, and depth of the mountainous seas, even in the restricted visibility. Sight thus became another parameter of the storm's intensity. The sound of the storm was all pervading. Howling and shrieking of wind, thundering crash of breaking seas, machinery and voices and other indications of human presence, all of it contributed to the awful noises of natural violence.

The feel of the storm was in every fibre of the body, shoulder and stomach and buttock muscles tensing under the strain of fear and anticipation. Leg muscles were sore from the continual effort of maintaining balance. Arm muscles and finger tendons were stretched to their extremes from grasping and grabbing to prevent falling. And Ogilvie's testicles were afire with pain.

The sour smell of fear seemed to assail his nostrils endlessly. He hoped it was his own. He tried to separate the odors of cooking and smoke and human waste and perspiring bodies permeating the unventilated corridors and rooms of the quarters. But they melded into the smell of fear. The sweetly sour tang of ozone also suggested the smells of life.

Fear can also be tasted and there was the strong and bitter taste of fright. The familiar, slightly sulphurous taste of partially combusted fuel oil, taste of rain water laced with flying salt spray. Bile from undigested food lying heavy in the stomach. The taste of sweat, cold sweat, dried sweat, the sweat of energy expended and fear hidden just under the surface of consciousness. *The sound and the fury,* he thought, *and the ultimate proof. Life or death, it all came down to that.*

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As headway carried the ship into the sea, a wall of water surged aft and cascaded over the house. It washed away the essential visiblity from the small group of frightened men huddling on the bridge.

As he waited for the windows to clear, as he waited to learn whether his ship would, or even could survive, Ogilvie cursed himself. *God! How could I be so stupid? So damned stupid! First, to think I could turn against all the rules, then to make this last idiotic error. Stupid, stupid, stupid! Why doesn't she clear? Please, God, let her clear!*

And, slowly, oh so slowly, the ship started to rise, the decks slowly clearing of water.

The onrushing sea, coupled with the near loss of all reserve buoyancy had exacted a frightful toll. The force of the boarding sea was awesome in its power. Doors and portholes had been stove in and there was the sound of water rushing through the quarters and passageways. Curses mixed with the sounds of breaking furniture, slamming doors, and undefined notes of confusion.

John Wright burst into the wheelhouse, blood trickling slowly from a cut in his forehead. He was dressed only in shorts and they were soaking wet. "What the hell's happening?" he shouted.

There was no one at the wheel. Texeira having lost his grip on the wheel had skidded erect and standing on the helmsman's grating, all the way to the port side. Ogilvie, dazed by the suddenness of events, still peered through the water-beaded windows. Tom Matthews, the young third mate, was diligently pushing the engine room telegraph indicator to "slow speed ahead." Ogilvie said nothing, just nodded.

Wright inquired, "Are you all right, Captain?"

"I'm all right, John. It's the ship and the men I'm worried about."

"Well I can tell you my room and the boat deck are a shambles. Don't know about the crew quarters or the men, but I'll have a look. Whatever the hell happened, it threw me out

of my bleepin' bunk. Damn near busted my skull on one of the settee drawers."

"Have a look around, John, and let me know what you find. Hurry, now!"

As the water cleared from the foredeck, Ogilvie was aware that the sea had somehow disturbed the line of the port bulwark. It was no longer vertical and straight. *My God,* he thought, *what awesome force to have bent that bulwark. Half inch thick steel plate supported by flanged braces every few feet. It's impossible to bend steel of that thickness without heating.* But the terrible force of that awful sea had bent the solid steel of the bulwark. Ogilvie had heard of such damage. He had never before witnessed it. He would never be a doubter again. He was pleased to see the bow was rising and the wind was at last on the starboard bow! Starboard at last! Or had the wind just shifted?

If the position shift was true, the ship could now work her way away from the center of the storm. But the cost had been frightful.

The interior of the ship, throughout the quarters, was a shambles. It would be hours before the damage could be assessed. It would be daylight before the condition of the hull were known. Several men had been hurt, at least one seriously.

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Several inches of water was covering the deck in every room. With the pitch and roll of the ship some of this water sloshed over the high thresholds of the rooms and into the passages. The water carried sheets of paper, shoes, cigarette butts, dust, drowned cockroaches, etc. The decks of the rooms were covered with clothing, broken furniture, and debris that floated in from other rooms.

Fear was also running through the quarters like the water on the deck. It could almost be measured in varying sizes and intensities.

There are three broad categories of fear. All were present on *Joshua Blackmer* that dark and storm-tossed night.

First: Fear of the unknown. Not knowing the ultimate havoc of the sea or when the next giant swell would crash on board. It was a fear that destroyed a man's ability to think clearly and act rationally. In some degree each of the men possessed, or were possessed by this fear.

Secondly: The stark animal fear of injury or death. Fear of physical pain is universal. There is no reasonable limit to the scope and extent of imagined injury. Would the next terrible impact bring added torment, even drowning?

Lastly: The fear of being found afraid. Peer approval and the mantle of respectability is craved, even when afraid. Fear is a difficult emotion to hide, a few men can be successful. These latter are the leaders of the many who cannot.

GLOSSARY OF NAUTICAL TERMINOLOGY

ABAFT, towards the stern.

ABOARD, on or in a vessel.

AFT, towards the stern.

AFTER BODY, the stern section of a vessel.

AMIDSHIPS, usually in the line of the keel, but sometimes midway between bow and stern.

ANCHOR, a device of iron so shaped as to grip the bottom and hold a vessel by the chain or rope attached.

ANCHOR CHAIN, heavy stud-linked chain attached to an anchor for mooring.

ASTERN, backwards; behind the vessel.

BALLAST, a quantity of iron, stone, gravel or other weighty substance placed in the lower hold of a vessel, or in some cases metal bolded to the keel, to increase stability by lowering the center of gravity. Spaces used for water ballast,such as double bottoms, are not included in net tonnage.A vessel sails <u>in ballast</u> when she carries no cargo. Water, sometimes oil, is the most common method of ballasting a large vessel.

BALLAST TANKS, are in the lower holds of vessels for carrying water ballast, also called <u>double bottoms</u>. They can be pumped out and flooded at will and used to trim the ship.

BATTENS, strips of iron that fit over brackets welded to the sides of a hatch coaming and secure the hatch-covering tarpaulins. When securely sedged, the hatches are said to be battened down. <u>Cargo battens</u> are long planks in the holds and 'tween decks along the ship's side to protect cargo from sweat and rust.

BETWEEN DECKS ('Tween Decks), the space between any two decks, but especially that in a cargo vessel below the main deck.

BILGE, the turn of the hull below the waterline.

BINNACLES, a box or non-magnetic metallic container for the compass. It is fitted with lamps, both oil and electric for night work.

BITTS, a pair of iron or wooden heads set vertically to which mooring lines are made fast.

BOATSWAIN, a subordinate but valuable officer; he ususally

has direct charge of work under the general supervision of the captain. Old men of sail used to pronounce the word Bo'z'n.

BOLLARDS, low vertical heads of iron or wood to which mooring lines are made fast. Sometimes called nigger heads.

BOOM, a spar with many uses. Cargo booms, which rest at the foot of the masts, are raised and lowered by topping lifts and swung from side to side by guys according to where the pieces of cargo suspended from them are to be placed.

BOW, the forward part of a vessel.

BRIDGE, an elevated thwartship platform from which the vessel is navigated and all activities on deck are in plain view. See also flying bridge.

BULKHEAD, a vertical partition extending fore and aft of a vessel. The main bulkheads are mostly watertight, and are known as such. They are equipped with watertight doors which are so fitted with a rubber gasket as to make a tight contact through which no water will pass.

BUOYS, floating beacons, which by their shape and color convey to the mariner valuable information as to his postion.

CARGO BOOM or DERRICK, a heavy boom resting at the foot of a mast. It is elevated by a topping lift tackle and controlled by guys. It is arranged to work cargo through deck hatches.

COAMING, the name applied to the structure raised near a hatchway to prevent water getting below.

COMPASS, is the most valuable instrument in navigation as it directs the course of the ship. It is known as the mariner's compass. There is also the gyro compass.

COWL, the upper part of a ventilator which flairs out bell-shaped at right angles to the main tube. This is faced in the direction of the wind.

DAVITS, small cranes that project over the ship's sides for hoisting boats

DEAD MEN, loose ends of gaskets hanging from a yard.

DECK. What floors are to a building so are decks to a vessel. Their arrangement and character depend on the type of vessel and the trade engaged in. A cargo steamer usually has a main deck with a raised section forward and one aft; there is also a mid-ship section over the engine and boiler rooms containing quarters, galleys and navigating bridge and chart rooms.

DEGAUSSING, is an arrangement of electric coils so installed in a ship that the magnetic field of the vessel is so neutralized as to give a degree of safety in passing over a magnetic mine.

DEVIATION OF THE COMPASS. The ship's compass, if uninfluenced by any local attraction or by any magnetism outside of the earth's lines of force, would point to the north magnetic pole. The construction of ships is so largely of steel and iron that they readily take on magnetism and become in themselves magnets. The different parts of the vessel, as the stack, steel masts, ventilators, davits, etc., are the poles of projecting magnets. The compass needle is affected by these influences and drawn one way or the other by the dominating force. These magnetized projections change their positions relative to the compass needle on the different directions of ship's head and thus make a new deviation for each heading. These are determined by observation and tabulated.

DEVIL'S CLAW, a heavy hook used in holding the chain when secured to an anchor.

DOUBLE BOTTOM, the space between the watertight plating over the floors and the ship's bottom. This space is utilized for ballast tanks and protects the ship in case of damage to the outside plating.

ENGINE ROOM TELEGRAPH, a mechanical device with a dial and two indicators (one having a handle attached), on the bridge and a similar one in the engine room. The dial shows by subdivisions the various speeds which are sent below according as the indicator is set. The engineer hearing an automatic bell notes by his indicator the desired speed of the engines. As a check against error he similarly returns this signal to the bridge where it is recorded by the second indicator.

ENSIGN, a flag, the emblem of a vessel's nationality.

FAIR LEADERS, are found in many forms but all serving the purpose of leading lines in the direction desired; they put an angle in the direction of a line so it may be brought to a winch.

FATHOMETER. A sonic depth finder.

FIDDLEY, a grating hatch over the engine and boiler rooms. In heavy weather, tarpaulins are spread over it and battened down.

FLEET, a collection of vessels sailing in company.

FLOTILLA, a fleet, perhaps more frequently applied to small vessels.

FLYING BRIDGE, the highest navigating bridge.

FORE, referring to the foremast.

FORE AND AFT, line of the keel.

FOREMAST, the first mast abaft the bow.

FORWARD, towards the bow.

GALLEY, the cooking compartment.

GANGWAY, a passageway aboard or ladder up a ship's side.

GOOSE-NECK, a metal device that secures a boom to a mast.

GUY, a rope or whip that supports or steadies a spar usually in a horizontal or inclined position, such as a cargo boom. A stay supports in a vertical position.

GYRO-COMPASS, one which receives its directive power from a gyroscope which in turn is operated by electrically driven rotors. The compass at all times indicates true north. It is the realization of a navigator's dream --no variation, no deviation.

HATCH. This term in common usage among seamen is indiscriminately applied to the opening on a ship's deck and to the covers that close it. However, it would seem that the best usage applies <u>hatch</u> to the opening, <u>hatch covers</u> to the heavy sections that close it, <u>hatchway</u> to the clear vertical space through the hatches of several decks to the hold, and tarpaulins to the three (in a seagoing vessel) canvas covers that protect against the entrance of sea water.

HATCH BATTENS, strips of steel or wood wedged to the side of the hatch coamings to make fast the tarpaulins.

HAWSE, the space forward from a vessel to a point directly over her anchor.

HOLD, a large lower compartment of a vessel for the stowage of cargo.

INBOARD, towards midships.

KEEL, the backbone of a vessel, from which rise the frames or ribs.

KNOT, a measure of speed, not one of distance. The term knots means velocity in nautical miles per hour whether of a vessel or a current. (A nautical mile = 6,076.1 feet.)

LADDER, a general term applied to all accommodations by which one proceeds below or on deck.

LATITUDE, the distance in degrees, minutes and seconds of a ship's position or location of a port north or south of the equator. A minute of latitude is equal to a nautical mile.

LAUNCH, a small boat with power, sail, or oars.

LINE, a general term for a piece of rope in use, such as the lines which make a ship fast, etc. In general, use of the word rope is avoided aboard ship, and nearly all ropes are lines.

LOG BOOK, a record of all the activities aboard a ship (her movements) and a record of all meteorological conditions. The official log book is a record of the crew, punishments, sicknesses, deaths, desertions, etc., and the circumstances of each. At the end of a voyage this book is forwarded to the government.

LONGITUDE, the distance in degrees, minutes and seconds of a ship's position or a port east or west from the meridian of Greenwich (0) through 180.

LONGSHOREMAN, a laborer who works loading and discharging cargo.

MAGAZINE, a compartment for the storage of ammunition. It is fitted with facilities for flooding in case of fire.

MAIN DECK, the principal deck of the main hull, being the highest of, and giving strength to, the main hull. It runs the full distance fore and aft.

MASTER, the commander of a merchant vessel.

MASTS, vertical spars set in sets primarily for setting sail, but also used for supports of cargo booms, the suspension of radio aerials and as a means for setting signals.

MESS, to eat. A group of persons eating together as, wardroom mess, CPO's mess. The different persons are messmates. They eat from mess tables and are waited upon messmen or mess cooks.

MIDSHIPS, the center fore and aft line of a vessel

MONKEY BRIDGE, usually above the pilot or chart house where the standard compass is commonly set.

MOORED, to lie with both anchors down.

MOORINGS, heavy anchors and chains permanently in position. The chains, in big-ship moorings, are attched to large flat-topped mooring buoys which have a large ring in the top to which the anchor chain of a vessel is shackled.

NIGGER HEADS, a name for bollards, and sometimes applied to winch heads.

OIL, used to prevent the seas from breaking is called wave or seacalming oil, sometimes sea-quelling oil.

OIL BAG, a contrivance from which oil is allowed to drip slowly and spread on the water, in order to from a slick and reduce the seas.

OUTBOARD, out from the vessel; away from the center fore and aft line.

PELICAN HOOK, a hinged hook which is held in place by a link. When the link is knocked off,the hook collapses.

PITCH, the fore and aft motion of a vessel.

PLATES, sheets of steel forming the outside skin of a vessel and the decks.

PORT, the left side of a vessel.

PROPELLER, the rotating wheel in a screw steamer which furnishes propulsion. The wings are called blades and the hub the boss. The propeller is often called the wheel or the screw.

PURCHASE, a tackle.

RADIO DIRECTION FINDER may be established aboard ship or ashore. It is equipped with an aerial that can be oscillated on a vertical shaft leading down to the operator. It is a characteristic of such an aerial that the radio impulses become more or less distinct depending on the angle at which they are picked up. By means of a large compass diagram the operator by turning the aerial can establish the bearing of a vessel or station by the intensity of the radio waves. At the point where the intensity is least- the null- is the bearing of the radio beacon ashore, or of the ship from a shore station. By observing another such bearing from a second beacon the master will have two lines, whose intersection when plotted on the chart establishes the the postion of the ship. Radio direction finders

are also installed aboard ship to enable navigators to ascertain the bearing of shore stations or other vessels.

RIGGING, the ropes of a ship.

RUDDER, a contrivance consisting of pieces of plank or steel plates bolted together or to a frame forming a flat structure. By positioning the rudder at an angle with the keel, resistance is developed to turn the vessel in a particular direction.

SCREW, the propeller.

SCUTTLE BUTT, a water cask containing drinking water for daily use. A modern vessel's drinking fountain.

SHAFT, the great rod which transmits the power from the engines to the propeller.

SHAFT ALLEY, the long compartment within which the shaft operates.

SLOP CHEST, a compartment set apart for the storage of the clothing and other necessities provided for use of the crew. The law requires that the owner of a vessel provide her with a complete equipment of clothing for all the crew to be sold at a ten per cent advance over the wholesale value in the port of departure. The merchandise of a slop chest is called slops.

SONIC DEPTH FINDER, an invention very valuable in charting ocean depths. They are determined by means of vibrations sent out from a moving vessel by an oscillator located on the under body, and the echo received through microphones placed at some known distance from the oscillator. "On Soundings" the depth is determined by the angle of reflection at the bottom of the sea, formed between the line of sound and that of the echo. But in greater depths the time interval occupied by the sound in traveling to the bottom and its return is utilized.

SPAR AND BOOM GEAR, an arrangement generally used in handling cargo.

SPARS, a term applied to all masts, yards, booms, etc.

SPEAKING TRUMPET, a tapering hollow tube through which orders are given.

STANCHIONS, upright pillars either of wood or steel. They are used to support the various decks. They are also set on deck for the purpose of spreading awnings and are known as awning stanchions.

STARBOARD, the right side of a vessel, looking forward.

STERN, the after part of a vessel.

TABERNACLE, a boxlike step, or socket, on deck, for a mast that does not pass through to a lower deck, sometimes having the after side open so that the mast can be lowered.

TACKLE, a mechanism composed of blocks (a frame which supports a roller over which ropes are run) and ropes. The theoretical power of a tackle is equal to the number of parts of rope entering the moving block.

TARPAULIN, a painted or treated canvas covering for a hatch. There should be three tarpaulins over the hatch of a sea-going vessel. They are secured to the sides of the hatch coaming by means of battens driven tight with wedges.

THWARTSHIPS, crosswise of the decks; from side to side.

TOPPING-LIFT, a tackle by which the after or outer end of a boom is topped (hoisted) or supported.

TOPSIDES, lie between the waterline and the ship's rail.

'TWEEN, between decks, particularly between the main deck and the one below it.

VENTILATORS, cylindrical tubes leading from below to above the decks where cowls catch the wind and force it below.

WATCH, a period of time on duty. A watch is usually four hours long, changing at 12, 4, and 8 o'clock.

WATCH CAP, the canvas cover over the funnel of naval vessel whose boilers are not in use.

WELDED SHIP, one in which all joints are made by the electric process of welding, no rivets being used in the construction. Such a ship is estimated to take 15 per cent less steel, 40 per cent less labor, and to have 5 per cent greater capacity.

WHEELHOUSE, the deckhouse within which the steering wheel is located. In many steamers the officer stands his watch here.

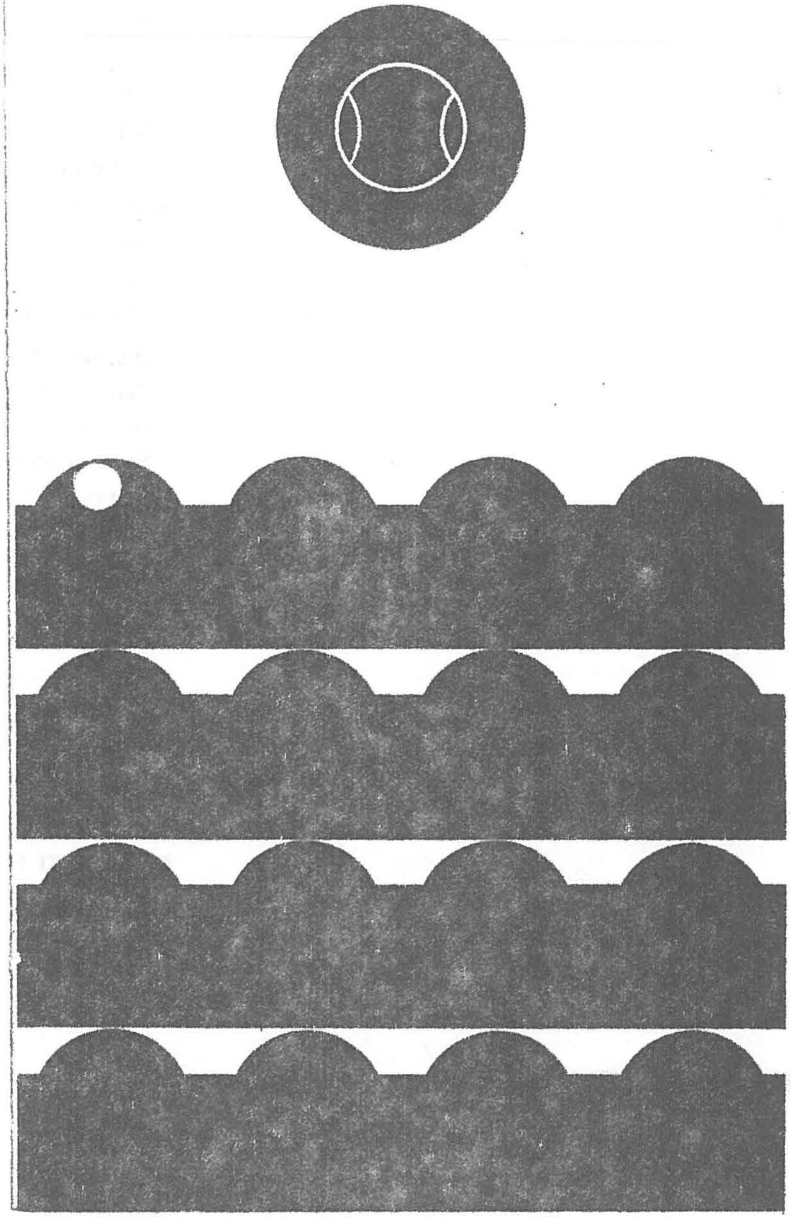
WILDCAT, the part of windlass around which the chain leads and which revolves when heaving in or out the chain. The wildcat is so recessed as to receive the chain links and prevent its slipping.

WINCH, a piece of machinery which operates a horizontal or vertical shaft, upon its ends being fitted the drums by which lines and tackle are attached. Winches are driven by either steam or electricity and are used for the loading and discharging of cargo, and the handling of spars and sails.

WINDLASS, a machine for hoisting an anchor. It is made in various forms, some working by hand with brakes, others by steam and electricity. In general it is a machine with a horizontal shaft on which the wildcat and winch head revolve.

Organizing and Conducting Your Tour

talks



talks

A Public Speaking Guide for
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CONTENTS

IMPORTANCE OF SPEECH

Have you ever considered speech and its importance to you? You utter thousands of words for every one you write, and hear hundreds for each one you see in print. There are many more occasions for use of the spoken word than for the written word, and this is especially true for those of us in uniform who daily meet park visitors face to face. Effectiveness in speaking, whether to an individual or to a large audience, is a valuable asset. So it is going to be profitable to work on making your speech more effective.

You have probably had some college training in speaking and have been acquiring speech habits, consciously or otherwise, since early childhood. Now is the time to take inventory of your skills and recognize your strong and weak points, discover how to improve them, and set about the task of improvement.

Although what follows deals mainly with speaking from a platform, many of the ideas have much broader usefulness. Many good techniques of public speaking are just as useful in dealing with an individual, in writing a popular publication, in laying out a self-guiding trail, or in conducting a tour.

YOUR AUDIENCE

Speech—the communication process—may be traced from an idea to an audience. Idea, speaker, and audience are equally important elements. We shall give attention to ideas and their organization and development. We shall consider the speaker and some of his problems and techniques as he meets his audience and puts ideas into spoken words. But it is obvious that all this is futile unless there is an audience attuned to sound and receptive to ideas. Talk is for people, and the successful speaker is constantly aware of the nature and characteristics of the people to whom he speaks.

Your audience is made up of individuals free to withhold or to give attention. The listener, present of his own volition, has voluntarily surrendered his time to hear what you have to say. In exchange, he is entitled to hear something interesting, to hear it from someone who knows what he is talking about, and to hear it presented in an intelligent and attractive manner in a pleasing voice. If any of these conditions is not fulfilled, you will lose the attention of your audience.

Listening barriers. At 8 p.m., on October 30, 1938, the famous radio program, War of the Worlds, starring Orson Welles, went on the air.

The program was a series of fictitious news flashes describing a Martian invasion of the world. Although repeated announcements stated the program was fiction, more than 1 million people were gripped with abject fear. During the program, Welles saw the studio's control room filling with police and realized they had caused a panic of national proportions.

This incident points up one thing—how poorly people listen. There are certain barriers to good listening that you as a speaker must overcome.

1. Listening takes energy. It is not a passive activity and is characterized by quicker pulse and a rise in body temperature.

2. Concentration is difficult. The average speaker talks at about 125 words per minute, but the mind can race much faster. If you cannot pull the listener back, he soon goes off on mental tangents and finally into mental excursions far from your remarks.

3. Distractions break thought patterns. Children crying, people talking, outside noise—any number of things can compete for the listener's attention or cause him to lose interest.

4. Listener's fantasy. This is a Walter Mitty reaction caused by 2 and 3 above. After a few flights of fantasy, the listener may be having more fun than you can provide and is thereby lost for the rest of the program.

Your ability to cope with these barriers to listening will depend upon the effective use of techniques proposed here.

Audience background. Park visitors comprise all types of people, representing widely varied experience, education, and temperament. If you give a talk which assumes an audience with a background different from that actually represented, audience will soon lose interest. You must state your message in terms familiar to the audience, relating it to situations familiar to them.

Audience intelligence. A certain background of information and vocabulary is necessary before the audience can understand and accept what you say. When your audience does not possess that background, it must be supplied. In doing so, you should assume that the audience is as intelligent as yourself, though unschooled in the subject matter. Your task is to arouse interest in something that is familiar to you—something that you have discovered and found interesting and are anxious to share with others. There is no greater fault in speaking than that of talking down to an audience.

Audience interest span. As a speaker, your first job is to attract the scattered and casual attention of the audience, and to focus it upon your subject.

Your manner of approach, your voice, and most important, *what you say first*, will determine whether you take the audience with you, or lose them. But to focus initial attention is not enough, for attention wanders and a speaker is never more than a minute or two away from loss of visitor interest. A skillful speaker repeatedly uses techniques for pulling wandering interest back to the subject. A change in voice inflection, of pace, an illustrative story, a rhetorical question, a comparison, a quotation, a picture, or an object are examples of such devices. Straight recitation of a series of facts without embellishment will lose most of the audience many times during the course of a talk, and is *not* interpretation.

In summary, a good speaker is aware of the expectation, interest, education, and experience levels of his audience. He approaches the audience at their level, and builds from that toward his objective.

YOUR SUBJECT

Whether you are a historian, geologist, or wildlife specialist, it is assumed that you will be well grounded in your subject. This booklet does not deal with obtaining facts and scientific background for a talk, but rather with the way they are presented. Of course facts constitute the building material of talks, and without that background, obtained through study, observation, and experience, no speaker can be successful. Here we want to suggest how you can organize the facts to give your talk unity, coherence, logical development, and climax.

Selection. The subject you select—or which may be assigned to you—should be one which you believe can be made interesting and about which you know a good deal more than most of your audience. Your interest will be reflected in your enthusiasm and sincerity, which will build interest in the audience.

Definition and limitation. Select a *phase* of the general subject to develop. Perhaps you are talking about wildlife. Can you expect to cover adequately *all* details of the 40 mammals and 100 birds of your area? The danger is that your talk will become nothing more than an oral catalog.

Define and limit the scope of your talk by reducing it to a phase that can be adequately handled. For example, consider the themes, *"How man gets along with animals," "How animals are dependent upon each other,"* or *"Strange habits of some strange animals."* In the course of the talk, you will mention many of the species present in your area, but by restricting the field, you can give unity, completeness, and greater depth to your presentation. Historical and archeological subjects should likewise be limited.

Conservation aspect. You are not trying to make experts of your audience. You are trying to give meaning to what surrounds them in the park or monument area. Part of that meaning relates to the natural and historical aspects of that environment, and part relates to conservation and national park objectives. Every subject we discuss exemplifies in some way the use, conservation, philosophy, objectives, or values of national parks and monuments. Discover those meanings and adapt them to your discussion.

ORGANIZING YOUR TALK

Synopsis and outline. You have selected your main topic. You have defined in your own mind the phase of that subject which you will cover. You have discovered the related conservation aspects. Next try to express your theme in a subject sentence, or short paragraph. For example, perhaps your general field is geology, and the specific phase of that subject is to be the story of water. Your synopsis might be:

We trace the course of water from the sea to its precipitation as rain and snow, and then follow it back to the sea, noting its effects upon life and upon topography en route. Thus we learn to understand the importance of watershed protection such as is afforded by a national park.

For an example in the field of history, suppose your general subject is the American Civil War, with the limited subject being the significance of the Battle of Antietam. The specific theme to be developed might be stated as follows:

The Battle of Antietam, September 17, 1862, was fought in western Maryland on lands surrounding Antietam Creek. It ended Lee's first invasion of the North, postponed indefinitely England's threatened recognition of the Confederacy, and gave Lincoln the opportunity to issue his Emancipation Proclamation. It thus greatly affected the course of the Civil War.

With this general picture in mind, you are ready to plan the development of these subjects. Here an outline is most useful.

WATER

A. Introduction

1. Water cycle defined
2. The effects of water as it returns to the sea

B. The geological work of water

1. Surface water
2. Underground water
3. Ice and snow

C. Water and wildlife

1. Response and adaptations to normal and extremes of water supply
2. Plants in relation to soil, water supply, and erosion

D. Water and man

1. Water and scenery
2. Water and modern civilization

E. Conclusion

Water enhances park and recreation values and is requisite to man's economy. Conservation of watersheds, as exemplified in certain national parks, is the best way to assist nature to provide adequate water for all these purposes.

ANTIETAM

A. Introduction

1. Brief background of the Civil War

B. Lee's Maryland Campaign, 1862

1. Reasons for first Confederate invasion of Northern territory
2. Lee's route of march and its influence on Federal military strategy
3. Federal attempts to turn Lee's march

C. Battle of Antietam

1. Positions of Lee's and McClellan's forces, September 17
2. Action on the morning of September 17 to the north of Sharpsburg
3. Action on the afternoon of September 17 at Burnside's Bridge

D. Conclusion: results of the Battle of Antietam

1. Immediate military results
2. Political and diplomatic results

The outline gives your talk structure and a plan of development; it results in a story to tell in a smooth, even, and logical sequence, and bound together or given unity through the device of a plot and an objective. Without such a structure and plot and objective, a talk becomes merely the telling of a group of apparently unrelated facts.

A certain degree of organization is almost automatic in some talk subjects such as travelogs, or those in which an orderly sequence of events forms the basic structure. Wildflower talks, animal talks, and the like, appear to be the most difficult to organize. Frame your talk within a theme, such as lifezones, a walk along a trail, color in nature, the food of animals. A talk should be on a definite subject (and stick to that subject); cover the subject with satisfactory completeness, and relate its several parts to the central theme: in other words, it should have unity and cohesiveness.

The introduction. Your talk will have three parts: An introduction, a development section, and a conclusion. For a 30-minute talk you might allow about 5 minutes for introduction, and somewhat less for the conclusion. So far we have considered chiefly the development section. The introduction and the conclusion commonly are planned after the basic structure of the talk is completed.

The introduction should first focus audience attention on you and your subject. You don't have to startle an audience in order to attract attention, but you do need an initial statement which is in itself of commanding interest. A story, an experience, a problem stated, or a question raised—all relating to and introducing your subject and anticipating its development—are good devices for accomplishing this purpose.

Having attracted attention and interest, and having indicated the general field of your talk, next tell the audience what you are going to do with that subject. The following examples illustrate these functions of an introduction:

Have you ever wondered why this country is called Yellowstone? The story is an interesting one, and dates back to the time of the French voyageurs who preceded Lewis and Clark. The Yellowstone we know today was long considered a myth, and before that myth was shown to be fact, many exciting adventures occurred right here where we are now. Let's look a little into the history of Yellowstone and picture in our minds some of those exciting scenes in its discovery and exploration.

or

In Ecclesiastes we read "All the waters of the land run down to the sea yet the sea is not full, whence the waters come, thither they return again." Water still evaporates, falls to earth, and runs downhill, and in this cycle from land to sea to air and back to the land, it affects the landscape, the forests, the fields of wildflowers, and the animal inhabitants of the wilderness, as well as the welfare of even those of us who live far below the mountains. Let's talk about water.

The conclusion. Finish off your job. You are not a continuously playing tape that can be started and stopped with equal effect at any point. For most, the conclusion is the hardest part of any talk. You will need to *work* on it.

The conclusion may be a recapitulation—a brief summation of the points you have established. It should tie those facts together in such a way as to point to the purpose of your talk—your objective. It often refers back to your introductory statement. It may, in addition, with skill and awareness on the part of the speaker, assume an inspirational tone. The best opportunity to leave a lasting impression with your audience invariably occurs during the last minutes of the talk. Make these minutes count.

So the land of the Yellow Rock River of the French, its mysteries explored and explained by Colter, Washburn, and Hayden, became our first national park. Where once tourists were harassed by the Nez Perce, millions now peacefully witness the eruptions of Old Faithful, or contemplate the colorful beauty of the Yellowstone Canyon. Once a land of mystery and tall tales, now the Yellowstone is a national park, preserved by our Nation for the enjoyment and inspiration of all our people. Yes, these riches of nature are yours and mine. They are ours to enjoy to the fullest degree, and to pass on unimpaired so that people for all time may know and enjoy the Yellowstone.

The conclusion for a talk on the Battle of Antietam could summarize its significance in this way:

This was the war's bloodiest day. Had Robert E. Lee won a decisive victory it might have foreshadowed the final independence of the Confederacy. As it was, the battle gave President Abraham Lincoln a long-awaited opportunity. Five days after Antietam, he issued his preliminary Emancipation Proclamation. Now the purpose of the war broadened. Not only would Lincoln fight to preserve the Union, he would end slavery as well. The bloody Battle of Antietam provided the backdrop for a great moral victory.

The conclusion may summarize, make an appeal, or look to the future. It may use quotation, object lesson, or illustration. It should not go off on a sidetrack, but should end with dispatch.

REINFORCING THE STRUCTURE OF YOUR TALK

The working outline gives your talk structure and unity, but it is only the framework of ideas which you must decorate and embellish—the skeleton which you must clothe with living flesh and blood. Here are some devices and techniques to strengthen that structure and give your talk life and color and interest.

Connectives and transitionals. Perhaps the first thing to work out is the matter of tieing the structure together. For example, you connect phrases and sentences by the use of the words *and, so, also, but, therefore, for example, besides, in other words.* Similarly develop transitional devices to move from idea to idea, from paragraph to paragraph, or from one section of your outline to the next. *This suggests, in contrast to, by comparison, in the meantime, an even more interesting case, a parallel situation, as we move on to another place, at another time*—these are examples of transitionals that lead from one idea to another. Transitionals give your talk a continuous flow instead of a jerky, broken, and detached presentation. They help hold attention and help you remember what comes next.

Suspense and climax. Suspense is achieved by arranging facts in order of their increasing strength of interest or of importance, by posing questions to be answered, or by the development of an idea in such a manner as to point toward a goal that is not immediately apparent. Climax is achieved as you reveal the answer to the question you posed, or the goal or conclusion toward which your facts have been leading. Suspense and climax may characterize a single sentence, a paragraph, or, indeed, the entire talk.

Following are some examples for study:

Cornwallis was defeated because of blockade by sea, the loss of his defense works to the land forces of Washington, ness among his troops, and dwindling supplies. (Decreasing emphasis.)

His troops were weakened by sickness, his ammunition and supplies were nearly exhausted. Toward the sea, the French held him under blockade, and with the capture of his defenses, Washington's army brought him under direct fire by land. Cornwallis was forced to surrender. (Suspense and climax.)

Here is a peculiar situation. In the middle of a dense forest, surrounded by hilly terrain, is this flat, treeless meadow. As far as we can tell, this meadow, sharply bounded by forest, has existed without change for hundreds of years. Why doesn't the forest advance upon it? (Suspense—a problem stated whose solution will develop through the body of the talk to a final explanation—the climax.)

Here is a cougar. Is it a varmint? Is it a ferocious beast, dangerous to man? Should it be exterminated, or are there good reasons why we should take steps to preserve this largest of our native cats? (Suspense through stimulated curiosity, to satisfied by a climax in the form of an appeal for understanding of the cougar's status.)

Supplementary material. You will not hold your audience's interest with a series of statements of fact. Recognizing this, you devise ways to dramatize the facts and to relate them to the lives of your listeners. You do this through illustration and anecdotes, with examples that make the facts applicable to the visitor's own experience and home environment, and by putting him into the scene you are describing. Here are some examples:

What would you have done had you been General Lee and faced with the seige at Petersburg?

or

It's the same sort of feeling you get when, waking up in the night, all sorts of strange noises, multiplied in your imagination, convince you there's a prowler around. But now, every unfamiliar forest sound, every strange shadow suggests BEAR!

Here are other guides to help listeners understand what you are talking about:

1. Define or explain in lay language any unfamiliar terms or concepts you will use.
2. Relate factual data in support of ideas.
3. Use anecdotes and examples.
4. Make comparisons and contrasts.
5. Cite testimony and quotation.
6. Employ narration.
7. Use repetition for emphasis, varying your wording.
8. Make full use of visual aids and of three-dimensional objects which can be seen by the audience.

Words as tools. Your talk will be diluted and weakened by words poorly chosen or improperly used or used too profusely. Carefully selected words, used judiciously and economically, give vigor and color to your ideas. Chose words that say exactly what you mean.

Live verbs are more forceful:

General Grant *believed.* (Active)

General Grant *was* of the opinion. (Passive)

The flood *eroded* the mountainside. (Active)

The erosion of the hillside *was* the result of the flood. (Passive)

Specific words express more precise meanings:

They *climbed* the mountain . . . (or, better, did they *scale, rope up, walk up, scramble, struggle,* or *stroll?*)

Simple words. Sometimes you will need to say *with regard to, for the purpose of, with reference to, in the nature of, with view to,* or to use modifying adverbs such as *worked diligently, fed abundantly.* Habitual speech patterns of this kind, however, result in monotony and dilution. Most of the time the single unadorned word is more forceful and more precise: *About, for, like, if, to,* or *labored* or *feasted.*

Understandable words. Use the language of the layman rather than technical, professional, or abstract terms. For example, do not use *"piece"* for rifle or gun, or *"redoubt"* unless it is explained to be a type of fort, or *"cannon emplacement"* for cannon platform. In archeological talks, don't say *"Anasazi complex"* when you mean simply the life of the Pueblo Indians. Similarly, *"plant succession," "fault," "Sonoran life zone,"* or *"saprophyte"* may not be understood by your audience unless the discussion itself makes the meanings clear.

This does not mean that you must avoid these words; they are very useful. People like to add new words to their vocabularies, and you can help them do this, while at the same time giving more precise meaning to your statements. Just be sure that you make clear to your audience the meanings of the new words and new concepts.

Slides. "It's easy to give a slide talk." Perhaps it is true that a poor speaker can "get by" by using slides, but then it is the picture, not the talk, that commands attention and holds interest. Occasionally pictures can be shown for their intrinsic interest and aesthetic appeal, and in these cases, the commentary quite properly is secondary. But using pictures to support the spoken word is quite a different matter, and requires a considerable degree of skill and careful preparation. Illustrations can easily steal the show unless you overcome certain handicaps.

First, you probably will be giving part of your talk in the dark, and thus be deprived of the use of facial expressions and gestures. To compensate, rely upon voice inflection for emphasis and attention.

Secondly, after placing yourself in darkness, then you give the audience something attractive and colorful to look at. For most people, what they see takes precedence over what they hear. People can hear and see at the same time, but unless what they hear is well coordinated with what they see, the mind will concentrate on one or the other.

The temptation is great to use slides as a substitute for good organization and as a cover for poor preparation and delivery. Speakers who use this crutch give themselves away as they introduce each slide with "The next slide shows . . . ," "Here we see . . . ," or "This is a picture of . . ."

How do you avoid these pitfalls, and overcome these handicaps? The following techniques should be helpful:

Prepare thoroughly for your talk. Forget about slides for the moment. Plan a talk that will stand on its own feet. First write down an outline of your talk and know what you are going to say. Then select and arrange your illustrations. Choose slides to fit the talk, not words to explain a series of previously arranged slides. Then you will be prepared to come through with the talk, even if your projection equipment should fail.

In the actual presentation, avoid all unnecessary reference to the slides. When you say "This scene shows," you are telling the audience to focus their attention on the screen. What you really want them to do is to listen to what you say. The effect you strive for is a well-organized, smooth-flowing talk which, at just the right time, is illustrated by a picture. Used in this way, pictures supplement the talk rather than compete with it.

Every change of scene on the screen is a momentary distraction from your spoken word. Try to make this work for rather than against you. One way is to make the transition to the idea illustrated by the next slide a few seconds before the picture is changed—in your commentary, anticipate the next scene. Recognize, too, that some of your pictures are so impressive that they immediately steal the show. Be prepared for your prize shot, and when it appears on the screen, let the audience concentrate attention on it. You may continue to talk, but defer important comment until attention swings back to you.

Vary slide time. This will prevent monotony and anticipation of slide change. Seldom should an illustration be on the screen much longer than 10 seconds. Otherwise your audience will start "searching" in the picture and your words of wisdom are lost. Of course, there are occasions when a slide being used to illustrate the explanation of a concept—say, a geological process—must be kept on screen for a longer period.

Expert projection is a basic requirement. An upside-down slide, an obvious spot or fingerprint, a jerky change, a delayed change, a slide changed too soon, a blank, fully lighted screen, an unusual noise—all of these are distractions that only serve to pull attention away from the picture, and more importantly, away from you.

Some thoughts about motion pictures. These programs are usually complete in themselves and need little except good projection to make them effective. Be sure the projector is clean; have the focusing accomplished and film positioned before sho time; make sure the sound works and is at correct listeni level; have spare projection bulbs and extra lamps on hand; know how to wrap a broken film on the take-up reel so the show can go on with minimum interruption; and be ready to fill in, if equipment or power should fail.

YOUR TALK

Appearance and actions. By the mere act of walking to the platform you focus all eyes upon yourself. An erect posture manifests self-confidence and inspires respect and confidence on the part of your audience. The same is true for overall appearance, which can be helpful in creating a favorable impression. By pausing a moment and looking at your audience with friendly interest, you can ensure quiet for your opening remarks. During this interval do two things—establish eye contact, and remind yourself that you are communicating with *people*, not talking to yourself. Make yourself aware that there is a real, live audience in front of you. Awareness of your audience will help you throughout your talk in maintaining good volume, tone, and quality of voice, and in giving naturalness to your gestures.

Don't prop yourself over a table, pace back and forth, fiddle with objects, or make meaningless motions. Limit your movement and gestures to times when they are called for by what you say and when they come naturally.

Finish your talk at its highest level, with its most important idea, pause, and then take your departure from the stand or otherwise let your audience know that the formal program is over. Don't apoligize, and avoid killing your conclusion by changing character, or uttering unessential comments—just close your talk and be done. (Old adage: Stand up; Speak up; Shut up!) Ending with an NPS arrowhead slide at the same time turning on the house lights often does the trick.

Use of your voice. We cannot deal extensively with the matter of training and speaking voice. However, the knowledge of some general principles and some common pitfalls will be useful. Voice volume and quality and articulation are important.

Volume, in general, is regulated and controlled from the chest and diaphragm. Breathe deeply, and gain force from the diaphragm. As an aid to establishing proper volume, select some person in the rear of your audience, and talk to him. You don't have to look at him all the time, but bring your eyes back to him periodically. Your awareness of that one person will unconsciously help maintain an adequate volume. Change of volume is a technique of emphasis, and a lowering of volume is often more emphatic than a loud voice. If available, use electrical amplification whenever you find that you must strain, even slightly, to be heard by all.

Voice quality is a product of overtones produced in mouth and head and added to sounds produced by the vocal cords. Without good overtones the voice may be thin, flat, colorless, harsh or nasal. Speaking from the diaphragm with clear and precise enunciation, speaking with an open mouth, and attempting to throw the voice toward the roof of the mouth are practices which aid in developing resonance, good tonal quality and fullness of voice.

Good articulation is basic to good speaking. Volume alone will not carry your message if your words are spoken indistinctly. On the other hand, with good articulation, less volume is needed to carry the voice to the audience. A deadpa- motionless lip delivery will result in muffled, slurred, ... indistinct tones. Good articulation is a result of active use of throat, tongue, teeth, and lips.

Your normal speaking key is generally best for you. Normal pitch places less strain on your voice, and provides the greatest latitude for expression. However, the excitement of appearing before an audience often raises the voice one or two tones above normal pitch. The very fact that the voice is too high prolongs stage fright, and the voice may never drop to its normal level. For most people, then, it is good practice at the beginning of a talk to deliberately lower the voice one or two tones. This may even place the voice below its most effective pitch, but it will soon move up to its natural level.

Speech mannerisms. Recordings of your voice probably will reveal certain mannerisms of speech. Some are bad, some neutral. Only *you* can correct them. The most common and objectionable is the habit of punctuating each pause with an "ah" or "uh." Keep your mind ahead of your voice and there will be fewer pauses and fewer occasions for "ahs." When you do pause, make it a silent interval. There is nothing wrong with a few of these. Pauses properly used are oral punctuation marks. Other mannerisms include habitual use of certain words or phrases, or of a set pattern of sentence structure. Use variety—synonyms for commonly used words, a varied sentence structure—to improve the cadence and swing of your talk.

A word about substandard speech. Your audience deserves and expects proper English. The use of colloquialisms and poor speech, such as "git" for get, "goin" for going, are intolera-- Good speaking ability is developed by practice and hard wo-- but it is rewarding.

Stage fright. Most speakers, including professionals, experience an excitement commonly called "stage fright." This is not fear of an audience and it will not render you speechless. It is a stimulation, an excitement, which results as the body fortifies itself in anticipation of an unaccustomed activity or a crisis. This stimulation can be an advantage to you. It can make your mind more alert, and add life and vigor to your delivery. Stage fright also may reflect fear of yourself, a feeling of inadequacy; complete preparation is the obvious antidote. Confidence and control come with experience, but in the meantime it is helpful to (1) firmly fix in mind your introductory statement, (2) pause, and gain eye contact with the audience before you start, (3) think about your subject, not about yourself, and (4) use a memorized outline.

During the course of a talk, sometimes your mind goes completely blank. Again, a brief pause while you collect your thoughts is not objectionable. If the next word doesn't come, step forward and repeat the last point you made, and go on from there. As a last resort, simply acknowledge that the next point has slipped your mind for the moment, and pick up your talk at the next point in your outline. If you talk from a -norized sequence of ideas, a memorized outline, rather -an from a memorized speech, you can't get lost for long in any place in your talk.

Reading aloud is helpful in improving the quality of the voice and also aids in avoiding the kind of stage fright that may occur when, for the first time, you become conscious of the sound of your own voice. Tape recordings should be made periodically to detect faults and improve quality.

USING FEEDBACK

Your first National Park Service talk before an audience probably will leave room for considerable improvement, especially if you have had little experience in public speaking.

Right after that talk is the time to start thinking about how to strengthen it. Did parts of the talk seem to leave you dangling or otherwise fail to come off smoothly? Did you forget an important point? Were there moments when you sensed that the audience wasn't quite with you? How about sections that may have evoked unusual audience interest—could you expand here next time? Jot down such ideas while they are fresh in mind.

To help improve your technique, you will want to know the reaction of others to your talk. Several sources of feedback are available; make use of all of them.

1. From the audience. Observing facial expressions during your talk can give you a good idea of how your words are -ng across. The inevitable questions put to you in an informal way afterward also will give you clues as to whether you were on target. On rare occasions your listeners will volunteer helpful criticism. This is most likely to happen when you chat with one of them the next day at the information desk or elsewhere in the park. There is nothing wrong with asking for such feedback from someone with whom you have established informal rapport.

2. From your collegues. Ask your co-workers to attend and criticize your talks. They, too, can be alert for audience reaction, usually from the vantage point of the last row or two.

3. From your boss. Sooner or later, usually not the first talk you give, your supervisor or other member of the park staff will audit your talk. Remember that his purpose is to help you, not to find fault. Take his suggestions in the spirit of welcoming self-improvement.

4. From the tape recorder. Tape one of your regular talks before an audience soon after you have started giving them, say your second or third talk. Audience situation tapes are especially useful in detecting unsuspected habitual use of words and phrases or other speech mannerisms.

TALK CHECKLIST

I. Preparation

Did I
- ☐ select slides that illustrate points clearly?
- ☐ run through slides, making sure they were clean and right side up?
- ☐ review my written outline before the talk?
- ☐ make sure equipment was ready to go?

II. Program time

Did I
- ☐ start off with a welcome?
- ☐ break the ice with an item of current interest about the park?
- ☐ work in somewhere the name of my organization?
- ☐ briefly state what the program would cover in my introduction?
- ☐ avoid talking down to the audience?
- ☐ explain technical terms at the time they were used?
- ☐ avoid frequent, direct reference to slides—"this is," "here we have," etc.?
- ☐ maintain eye contact with audience?
- ☐ let my voice reflect enthusiasm, using inflection, varied pace?
- ☐ beware of speech mannerism and distracting body movements?
- ☐ end with a conclusion, friendly, but a definite cut-off?

III. Self Evaluation

Was ☐ the talk well-organized, with one subject flowing smoothly into the next?
☐ audience interest held throughout?

Did ☐ the audience get any new ideas?

Were ☐ favorable attitudes toward the area, the Service, my subject developed?

Am I ☐ taking advantage of feedback to improve future talks?

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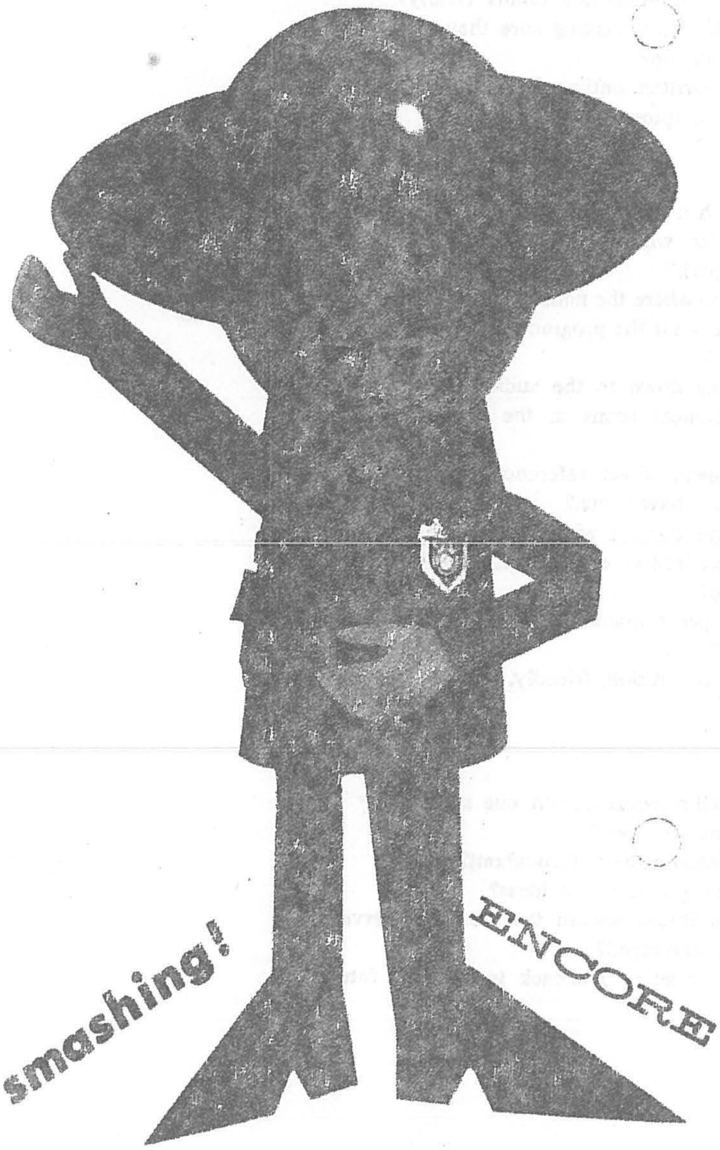
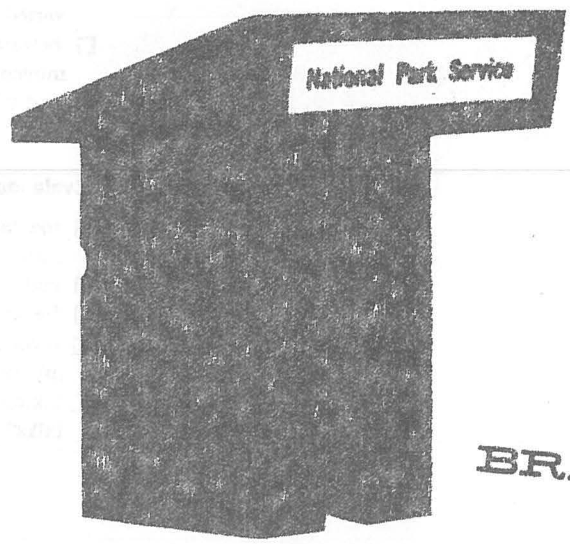


A LAST WORD

It is said that rules are made to be broken. Certainly many of the procedures outlined here may be violated without resulting in failure. There is still a very important place reserved for individual expression and originality. By all means experiment, develop new techniques, or devise methods of presentation that best reflect your own abilities and personality and that fit the local situation. Before breaking the rules, however, you should know the rules, and in judging performance be sure of the criteria for the measurement of success.

Nor will this, or any other discussion of speaking in itself, give you ability as a speaker. Speaking is a skill; it is capable of improvement, and, like golf or singing, it will decline through lack of exercise. There is no way to achieve proficiency except through practice.

* * * * *



BRAVO

WELL DONE!

terrific!

great!

WOW!

The Name of the Game: THEMATIC INTERPRETATION

Based on the belief that the aware interpreter motivates rather than educates, the following steps should be followed:

I. SELECT THEME (Message)

This is the WHY, the often unspoken idea. It is the link that unites Lincoln Memorial to Old Faithful, the Liberty Bell to Lassen Peak, the Indian mummy in Mammoth Cave to Half Dome. When knowingly and purposefully used it unifies the Service and moves us all (NPS communicators and the public) toward our common goal of Environmental Conservation. Without themes we practice "Park Awareness" rather than "Environmental Awareness". With themes we assist our audiences to arrive, on their own, at a predetermined (though usually unannounced) destination. Once all roads led to Rome; now we want all roads to lead to Environmental Conservation. Your local roads, or themes, might be: "Man's Dependency on the Environment (nature)," "Interdependency of All Life," "Similarity of All Men," "Similarity of All Life," "Change," "Man's Adjustment (or maladjustment) to the Environment," "Cultural Order," "Natural Order," "The Food Chain," "War Is Hell," "War Is Necessary (or unnecessary)," "War Is Futile," "War Is Natural," "Adaptation," "Adjustment to Change," "Adjust (cooperate) or Die," "Courage (and reward)," "Greed (and price)," etc., etc., ad infinitum.

II. SELECT MEDIUM (Vehicle)

This is the WHAT, the "cast of characters". You will have little choice here because mediums are facets of the park story. Your choice is what part of the park story you will use. The medium is composed of "facts," which are subordinate to and much less important than your theme. Your subordinate (medium) may be: "The Battle of ____________," "The Trees (forest)," "The Flowers," "The Birds (or one species)," The Mammals (or one species)," "A Person," "The Actions of a Group or Individual (war, exploration, development, defense, progress or 'progress,' philosophy, struggle, belief, etc.)," "A Structure (building(s), bridge, road, etc.)," "The Seashore," "A Lake," "A Mountain," "A Bog," etc., etc., ad infinitum.

III. ACCOMPLISH RESEARCH

This does not mean original research (nor does it necessarily eliminate certain aspects of it), but it does mean you should gather together all the facts that others have discovered. You must know what you're talking about, and your interpretation (motivation) must be based on knowledge - your knowledge. Research can lead to other mediums (vehicles) and to themes galore. Evaluation of facts will enable you to explore all facets of the environment and help make life more meaningful — for you and those to whom you interpret.

IV. PRODUCE AN OUTLINE

Sure, it's work, but it's part of the price you must pay if you want to produce good interpretation. Follow the usual pattern of outlines: Write out the major divisions (Roman numerals) before you tackle the supporting points. Then finally, fill in the finer details.

Your theme (Step No. 1) should guide your outline. In fact, the outline is not a tough chore if the theme is clear in your mind. If you're not in the habit of producing outlines you may not appreciate this step, but your audience will. For whom is the interpretation intended?

I.
- A.
- B.

II.
- A.
  - 1.
  - 2.
- B.
  - 1.
  - 2.
    - a.
      - (1)
      - (2)
    - b.

III.
- A.
- B.
- C.

V. WRITE

Regardless of how the interpretation is to be presented - orally or in writing - it should be written out first. On this first writing, creativity should be your sole guide - letting yourself go with all the originality at your command. With theme uppermost in mind, and closely following the outline, ignore length at this time. Avoid direct use of facts as much as possible, remembering that interpretation is motivational, not educational.

VI. <u>RE-WRITE</u>

This is pruning and grooming. Recognize that brevity and simplicity are the basic requirements of clarity and effectiveness. Make sure of your timing. In the rewrite insist on accurate sentence structure, and settle only for the <u>best</u> words in relation to your theme. Avoid adjectives (especially double or triple ones), for they will weaken your product. Nouns and verbs are your most important and powerful tools of communication, and select with care, remembering that the theme should dictate your selection.

VII. <u>GET CRITICISM</u>

Before presentation have the courage to have your product criticized by as many people as possible. Remember - interpretation is for others, not yourself, so let others preview it <u>critically</u> before using it publically. Who makes a good critic? Almost anyone. So they'll react subjectively? So will the public.

VIII. <u>UPDATE</u>

Continue to improve the final product or get rid of it.

Remember - Anyone can be an effective interpreter if he:

(1) <u>Wants</u> to be

(2) Will pay the price of proper preparation.

ORGANIZATION OF TALKS

Freely adapted from Glen R. Capp's "How to Communicate Orally"

I Introductions have 3 purposes: (1) to create a favorable atmosphere for the talk (2) to stimulate interest in the subject (3) to clarify the topic.

A. A favorable atmosphere may be created by:

1. Referring to momentary interests
2. Responding to mood of audience
3. Referring to special interest of audience
4. Honestly complimenting the audience

B. Interest may be stimulated by:

1. Asking a stimulating question
2. Asking a series of questions
3. Beginning with an unusual statement
4. Beginning with an illustration or narrative
5. Beginning with humor (if related to talk)
6. Beginning with a provocative quotation
7. Relating a pertinent personal experience
8. Referring to a problem
9. Referring to the occasion

C. The topic may be clarified by revealing the theme and its main headings.

II. The body of the talk may be developed by: (1) disclosing the theme, (2) dividing the theme into main and subordinate headings and arranging them into an organizational pattern, and (3) supporting your ideas with explanation, reasoning, evidence, analogy, etc.

A. The theme should be worded as a complete sentence which summarizes the entire speech.

B. The main headings must support the central idea. They may be arranged according to one of the following patterns:

1. Deductive or inductive
2. Problem solution
3. Time-order
4. Enumeration-order
5. Logical (step-by-step) order
6. Location-order
7. Cause-to-effect and effect-to-cause
8. Simple-to-complex
9. Familiar-to-unfamiliar

III. The conclusion rounds out the theme by (1) summarizing the main points, or (2) amplifying the theme, or (3) indicating desired action, or any combination of them.

PREPARING THE TALK

1. Know what you are going to try to convey; don't ramble.
2. Organize your data in a logical sequence. Make it easy for the listener to absorb and remember.
3. Be sure of your facts; research if necessary. Don't just "think" what you say is "right".
4. Outline the talk visibly. It will help keep your thoughts in order, and you will be surprised how well you will remember what you wrote.
5. Don't grind on and on with facts. Use bare facts sparingly and intersperse them with examples and stories illustrating them. Use facts to support the concepts you want to explain.
6. Keep the presentation in story form.
7. Rehearse your talk with a tape recorder if possible. It will help reveal weaknesses.
8. Direct your story toward a climax and stop when you reach this point. Leave the visitor wishing you had continued.
9. Plan the talk for a reasonable length of time. Usually 30-35 minutes is about right.
10. Project your personality to the audience.
11. Make yourself heard on the back row. Speak up, don't shout.
12. Don't use hand specimens if you really want the items to be seen by other than those on the front row.
13. Don't try to memorize your talk. It is deadly if you forget.

PRESENTING THE TALK

1. Have a friendly introduction to your talk.

2. Always face the audience when speaking. Eye contact is imperative. If you are using slides, don't talk to the screen. Glance at it occasionally to check slide sequence and focus.

3. Speak at a slower speed outdoors than indoors. It is more difficult to project your voice.

4. Carefully pronounce words that may be difficult to hear clearly or to grasp.

5. Always remember that your subject is familiar to you, but probably not to most listeners.

6. Stick to a "story" approach rather rigidly. Strive for continuity; a disjointed program does not carry the message.

7. Keep in mind that people do not remember much of what they hear.

8. Use familiar examples to illustrate your point, even homely ones.

9. Use some gestures, as they can be seen even at night. Gestures lend emphasis and reinforcement to key points. Use gestures that feel natural to you; affected gestures come across as just that.

10. If you have a campfire, don't let the fire burn too high. It distracts and may become too hot for those close to it.

11. Don't add fuel to the fire during your talk, it breaks the thought you are developing. If fuel must be added, choose someone else in advance to do it.

12. Keep the language simple and free of hangups; don't get academic or involved.

13. Use words that are well understood.

14. Keep your volume high enough to be heard, even with a microphone. Be sure volume controls on the amplifier are set at a comfortable audible level.

15. Have a place for your hands, preferablw at your side.

16. Don't slouch! Stand reasonable upright, but not stiffly.

17. Don't walk around too much. Some is permissible, but pacing is bad.

17. Don't walk around too much. Some is permissible, but pacing is bad.

18. Don't get overly dramatic. Some drama may be effective, but don't go overgoard. You are not an actor.

19. Don't be too serious, neither try to be a comedian.

20. Be courteous. Do not slam people or things.

21. Watch the audience; don't watch the floor or the ceiling You can often gauge your effectiveness by observing visible audience reaction to your talk.

22. Don't be an obvious "know it all."

IN CLOSING

1. Don't just come to the end of the talk and stop. A strong conclusion is essential.

2. Close with a "punch" thought, if possible, or a brief summary.

3. Close on time, visitors get edgy and bored if you drag it out.

4. Repeat capsule announcements, if deemed necessary.

5. Invite questions after the talk.

6. Be courteous. Answer questions willingly, as this may be the only time some visitors will talk to a person in uniform.

7. If you are in a hurry to leave after the program, you are in the wrong job! Never be in too much of a hurry to be friendly and helpful.

EFFECTIVE SPEAKING

INTRODUCTION

You do not have to be a polished orator to be an effective speaker. The more NATURAL you are in front of a group, the more you ACT LIKE YOURSELF, the better speaker you are going to be. A good speaker talks to a group in about the same manner he/she will talk to one or two of his/her friends in a natural conversation. Start out by realizing you are not going to have to become an entirely different person when you rise to speak.

THERE IS NO SUBSTITUTE FOR ACTUAL PRACTICE

Take every opportunity to practice the ideas presented in the training course. Force yourself to speak to groups, even though your knees knock - your voice quivers - and the words at first come hard. Remember, some of the greatest speakers of all time were not born that way. They acquired their ability by conscious effort. You can become a more effective speaker IF YOU TRY!

PREPARING TO TALK

The most important step in giving a speech of any kind is thorough preparation. THere is nothing you can do which will be of more help in combatting nervousness and promoting confidence. Study the subject thoroughly -- until you KNOW you know it -- get all the background material you can find. As you do this, you will become more enthusiastic about the subject. Eventually you may reach the point where you will actually be eager to deliver your speech.

Write out your speech completely if you find it necessary - but DON'T TRY TO MEMORIZE IT, and DON'T PLAN TO READ IT WORD FOR WORD. A canned speech sounds like a canned speech, and under pressure, the person who memorizes a speech will be in trouble if he/she forgets a line. It is better to form your words as you think them out in front of the group. In order to get your ideas across to your audience, YOU'VE GOT TO BE THINKING OF WHAT YOU'RE SAYING. So, if you write your speech out word for word, make a brief outline of it - THEN THROW THE WRITTEN SPEECH AWAY.

THE PRESENTATION

Your attitude is extremely important. Don't slouch or drag as you walk to the speaker's position. Force yourself to assume a friendly, confident, enthusiastic attitude. Enthusiasm is contagious - it is caught, not taught. Remember, there is no substitute for SINCERITY. You must be sold yourself to sell others!

Don't apologize. A common tendency of inexperienced speakers is to start out with, "I'm not very well prepared" or "I don't know very much about this subject." That is your fault - don't publish it!

Don't shoot the bull. Get down to facts. Hit the nail on the head. Get into your speech the way you planned it and keep it going that way.

Don't try to avoid your audience. Try to look at every person. Actually see them. Look at them as warm, friendly, interesting human beings, for they are, whether you think so or not.

Don't lean or slouch. Don't pace wildly back and forth, but do move occasionally. Gestures should be smooth, free and easy-natural and used to help convey the meaning of the spoken word.

Don't distract attention. Personal mannerisms such as wieght-shifting, figiting, playing with a button, pencil, etc., shoe-shuffling, handing-hiding, taking glasses off and putting them back on repeatedly, are sure to distract. Don't smoke or chew gum - you owe your audience your full attention the same as you expect attention from them.

Don't conspicuously look at your watch or a wall clock. If you have to time yourself, put your watch by your notes where it will not be obvious.

CONCLUSION

Quit while you still have interest. Summarize your talk and finish up clearly with a good punch line. Don't drag out the ending and don't finish up with "I guess that's about all I have to say" or "I guess that's the end." You may find that you have skipped or forgotten several things. Don't try to go back and add them. Your audience will never know the difference!

HINTS ON TYPES OF SHORT SPEECHES YOU MAY BE CALLED UPON TO DELIVER IN BUSINESS OR WORK

THE SPEECH OF INTRODUCTION

Probably the most abused of all is the speech of introduction. While this type of speech is a short one, it is highly important in getting a speaker off to a good start. Most speeches of introduction given by untrained speakers are incredibly sloppy. The following is an example of how not to introduce a speaker to his audience: "Tonight we're gonna hear a talk by Mr. X. I don't know just what he's going to talk about but..well, I guess it's all yours, Mr. X."

Speeches of Introduction must be brief, normally no more than from 30 seconds to a minute. Avoid stale and stilted phrases such as, "It is indeed a pleasure"..."A man who needs no introduction." Don't embarass the speaker by builidng him up as a speaker - it is more important in the introduction to tell who he is and what he has done. Don't exagerate your speaker's qualifications. Avoid false starts "and so I take great pleasure in introducing Mr. Brown...(Mr. Brown rises_..a man who is eminently qualified in many way", _(Mr. Brown drops nervously back in his chair). Above all avoid stealing the spotlight. Your job is to give the speaker a good start, not to show the audience what a treat it is missing because they did not select you as the speaker.

THE SPEECH OF INTRODUCTION (cont)

Now here is a little guide for your speech of introduction:

1. WHY THIS SUBJECT? (If desirable, show why the subject is important to the audience.)

2. GIVE SOME FACTS ABOUT THE SPEAKER.
   Who is he?
   What has he done?
   Why is he qualified to talk on this subject?
   (Be specific! Don't ramble on!)

As the last word of your last sentence, with a climatic intonation or unmistakable finality announce your speaker's name. Announce it clearly and with sharply increased voice volume. Face your audience as you deliver this last sentence, then swing swiftly about and face your speaker. Remain standing in this position until the speaker rises and acknowledges your introduction. Then SIT DOWN. Your work is done.

THE SPEECH OF WELCOME

This little formula is used when presenting a new supervisor to your group, or in presenting any important person to an organization.

1. Objectives and purposes of your group.
2. The past experience and accomplishments of the man presented and how his accomplishments will fit into your group's goal.
3. Extend a warm welcome to the man and assure him of cooperation of the group.

THE RESPONSE TO THE SPEECH OF WELCOME

Now here is your response if you are the man being welcomed into a group:

1. You are glad to be present and appreciate your welcome.
2. Comment briefly on the organization and pledge your support of the group's goal.
3. Brief statement that you are looking forward to association with the group.

THE SPEECH OF FAREWELL

When you are retiring, transferring, or otherwise leaving the group:

1. Don't make it gloomy. Use a pleasant touch.
2. Briefly mention the happy experience and pleasant relations with the group.
3. Praise the group and mention the good future of the group.
4. Conclude by expresssing your desire to maintain the contacts and friendships with the group.

PRESENTING A GIFT OR OTHER TOKEN OF APPRECIATION

When presenting a gift or other item to someone leaving your group or to someone having a birthday or special occasion, try this formula:

1. Discuss accomplishments of activities of person honored.
2. Briefly mention desire of group to do something for person honored.
3. Speaker presents gift or has someone from group present it.

ACCEPTING A GIFT OR OTHER TOKEN

1. Thank the group for the gift. Express appreciation.
2. Brief comment on pleasant association with members or group.
3. Open gift.
4. Comment on how gift will remind of pleasant association.
5. End with another sincere expression of thanks

THE SPEECH OF TRIBUTE

When honoring someone for his good work done or other achievements:

1. Mention the objectives of the group.
2. Mention the acts of the individual which are being honored.
3. Show how such acts have inspired or helped others.
4. Ask the man honored to stand (group applauds). The man sits down. A response is not ordinarily expected.

THE SPEECH WHICH MUST BE READ

Contrary to what the uninitiated might think, the speech which must be read is the most difficult of all speeches to give effectively. Most people revert to a "canned" sing-song while reading a speech. They do not even know what they are reading, and the speech does not carry through to the audience. It is extremely difficult for the amateur reader to get his eyes off the paper, and eye contact is completely lost. Avoid a "reading" if at all possible.

Interpretation for Special Populations

INTERPRETATION FOR HANDICAPPED PERSONS

by

Jacque Beechel[1]

INTERPRETATION

Function

The function of interpretation in outdoor recreation is to enrich the visitor's experience and facilitate preservation of the resource. It can accomplish the first objective by:

1. alerting the visitor to what is available in the area,
2. giving him an understanding and appreciation of the special history or features of the area,
3. arousing interest in new subjects, or
4. stimulating further exploration of old interests.

It can facilitate preservation by:

1. directing visitor use patterns,
2. promoting an understanding of what part the resource plays in the visitor's life,
3. explaining why and how the resource should be preserved,
4. providing an explanation of who the managing agency is, what it does, and its objectives and policies.

A National Park Service administrative manual explains the function of interpretation most succinctly: "Through interpretation, understanding; through understanding, appreciation; through appreciation, protection."

Definition

Most interpreters have their own variation of the definition of interpretation and a representative sample can be found in Sharpe (forthcoming, John Wiley), and Tilden (1967). (For another thorough treatment of interpretation, see Brown, 1971). Basically, interpretation is the communication of information

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about our natural, cultural, human and scientific heritage. It has traditionally been provided at parks, historical sites and museums by naturalists, historians and other specialists.

Interpretation is usually presented through the use of personal talks, recorde messages, printed material, films, displays, demonstrations, dioramas, maps, signs, electronic devices, and the items being interpreted. Such interpretive tools are used at visitor centers, museums, amphitheaters, information desks, campfires, roadside exhibits, auditoria, on trails, television, or in classrooms.

Effectiveness

The traditional methods of interpretation have placed most of the emphasis on presentation. Of late, there has been a questioning of the success of traditional interpretation -- is it producing the desired effect? To be effective, interpretation should be designed so as to be appealing to each visitor, and to communicate in a manner that is understandable by each visitor (Field and Wagar, 1973). Interpreters are starting to put more emphasis on involvement. This change in approach is based on the premise that involvement is more conducive to understanding. In addition, interpretation that relies on involvement of the visitor can be tailored to suit the visitor.

In order to make this new approach effective, we must know who the visitors are. Most of today's interpretation assumes a relatively homogeneous audience with similarities in age, area of origin, native language, educational background, cultural background, beliefs, interests, mental capacities, physical capacities, and recreational goals.

Which visitors are not considered in such interpretation? Elderly persons, the young, people from foreign countries, the highly- and under-educated, ethnic minorities, and physically or mentally handicapped persons are some of the visitors whose needs are not served by such interpretation.

It is part of that group to which this study has been addressed -- the physically or mentally handicapped person. What special characteristics must be considered in order to provide effective interpretation for a person handicapped physically or mentally?

HANDICAPPED PERSONS

Who are the handicapped? They are people who, through congenital defect, disease, infection, cultural or environmental deprivation, or accident, have lost the use of some part of their bodies. For purposes of this study, I have addressed only the handicaps of blindness, deafness, deaf-blindness, mental retardation, and ambulatory limitations.

Because individuals have some physical or mental impairment does not mean that their needs for outdoor recreation, or abilities to benefit from it, are impaired. The benefits of outdoor recreation for these people are no different than they are for anyone: change of environment, introduction to new knowledge, stimulation to pursue new interests, relaxed social interaction that can possibly lead to a greater understanding between different types of people, and a pushing outward of the boundaries of their particular worlds.

While the benefits are the same, the need for these benefits may be even greater among the very people who cannot engage in outdoor recreation because their needs have not been met. Those who have a physical or mental impairment quite often are underdeveloped socially, physically, mentally or culturally, due to a lifestyle that has been restricted, partly by their impairment and partly by a world that has not been designed for them. Any effort to ease the latter restrictions will contribute to the easing of the former restrictions by allowing these people greater self-improvement.

Following is an introduction to the handicaps, including descriptions and misconceptions. Also included are hints for interpreters about necessary modifications in interpretive programs for, while the benefits are the same as those for non-handicapped persons, the ways of achieving them are necessarily different. The lack of any major problems should make it apparent that few modifications in design policies are necessary when considering the needs of these people. Most handicapped persons need no pampering; they are quite capable of handling any situation that is safe for the non-handicapped user. Interpretive programs need to be designed to provide for: physical accessibility; an appropriate mode of communication; and use of the unimpaired faculties.

Blindness

Facts

In the definition adopted by the American Medical Association in 1934, "a person is said to be legally blind if he can see no more at a distance of 20 feet than a person with normal sight can see at a distance of 200 feet (20/200 corrected vision), or if the angular distance of the visual field is 20 degrees or less." (Normal vision takes in an angle of 60 to 70 degrees.) The American Foundation for the Blind terms "blind" only those with a complete loss of sight; all other degrees are termed "visually impaired." Of the blind population, about 3 out of 10 are totally blind or have only light perception; the others have varying amounts of vision. In 1970, there were 6.4 million visually impaired people in the United States (Goldish, 1971).

Misconceptions

It is erroneous to assume that a blind person and a sighted person utilize the same skills in learning. For the person who is <u>born</u> blind, learning is different than for the sighted. Such a person cannot learn by watching and imitating; he has to listen, touch and remember. Memory is extremely important for both the person blind at birth and the person blinded later in life.

Another common misconception is that blind people develop some sort of "six. sense. What is developed instead is an alertness much greater than that of sighted individuals. As Dickman states: "Experiments have shown that blind persons do indeed identify sounds better than do blindfolded sighted persons - not because they hear better, but because they remember better and have practiced longer." (Dickman, 1972)

The belief that all blind people read Braille is also a misconception. Only 5 to 10 percent of people who are blind have learned this touch system for reading. There are three main reasons: 1) the definition of legally blind, 2) age, and 3) individual circumstances at the onset of blindness.

1. Because a person sees less at 20 feet than do people with normal vision at 200 feet, or because his vision encompasses only a 20-degree field, does not necessarily mean that he cannot see anything. Only 12 percent of the legally blind have light perception only, and an even smaller percent are totally blind (Rogers, 1970). Most of the legally blind can still read regular print if it is larger than usual; they do not need to learn Braille.

2. Approximately half of the people legally blind are 65 years of age or older. Due to the general deterioration that accompanies old age such as loss of finger sensitivity, greater fatigue and failing memory, there is little potential among older people for learning Braille.

3. Factors such as age, extent of education, type of living habits and type of employment at the onset of blindness can determine whether a person will learn Braille, and how much. Braille is essential if the newly blind person is pre-school age and has most of his learning ahead of him. If the recently blinded person is in the latter part of his career, he may choose to get along without Braille, or with just enough to make or read cryptic notes enabling him to follow his main interests. Many people who become blind in the later stages of their lives elect to use no Braille because they feel it would draw attention to their handicap, therefore damaging their self-image. Others do not learn Braille because their financial or geographical circumstances preclude exposure to proper training.

Helpful Hints for Interpreters

Do not hesitate to offer help to a blind person. He will let you know if he can manage alone.

If you are not sure how to help, ask him; he is an expert.

Gently touching his elbow will let him know you are addressing him.

Do not touch his cane or dog.

If you are helping him walk, offer him your arm rather than taking his. He can guide by the motion of your body. Try to sense the right speed for him.

When you meet him, say "Hello (his name), it's (your name)." He cannot see who you are.

Let him know when you are approaching and leaving.

Do not address him through someone else such as: "What does he want?" Say to him: "What do you want?"

When seating him, place his hand on the back of the chair or bench. That reference point is the only help he needs.

Go ahead and use words like "see" and "look"; he does.

He does not want pity; he has adusted to his handicap and would like you to do the same.

The requirements for use of interpretation differ for a person who has partial sight and for another who is totally blind. The one who has partial sight will probably be able to use interpretation without modification, as long as safety hazards have been removed and the information is presented either by way of sound or signs employing large print. A tototally blind person or one whose sight is severely diminished will need no devise for guiding other than his cane or the person accompanying him, but he will need information presented by way of sound. Interpretation should be designed to allow full use of the senses of touch, smell, hearing and taste.

How to refer to a blind person can present a problem. Some prefer "visually handicapped." However, Dr Jerome Dunham, director of Northwest Rehabilitation Center for the Blind, who is himself blind, says his organization is using the term "blind" and trying to give it a positive, rather than negative, connotation. Probably a universal solution will never be achieved. The problem will have to be dealt with on an individual basis. Avoid referring to blind people as "the blind"; it makes them feel like non-persons.

Deafness

Facts

The normal human hearing apparatus in babies has a range of 16 to 30,000 cycles per second (cps) of sound waves. The frequency of the sound waves regulates low and high pitch of tones. The range decreases as people grow older. At teenage, the upper limit has decreased to approximately 20,000 cps; at middle age, it is around 8,000 cps; and by the time one has lived for 80 years, he probably hears nothing above 4,000 cps. The range of normal conversation is around 500 cps for sounds like "aw," and around 2000 cps for sounds like "s."

Besides having pitch, tones have varying degrees of loudness that are measured in decibels: the amount of pressure caused by the sound waves. From 4 feet away, a whisper has an intensity of about 30 decibels; normal speech, about 60; and a shout, about 90. These are exponential increases so that 90 is much more than 3 times the intensity of 30.

In a test of hearing, an individual is considered to have normal hearing if he can detect sound with an intensity of from 0 - 25 decibels in the critical speec frequencies of 500, 1000, and 2000 cps (Harvey, 1974). If the intensity must be 25 - 55 before he can hear it, he is considered "hard of hearing." If the inten sity must be 55 - 75, but he can understand amplified or loud speech, he is also said to be "hard of hearing." If the intensity has to be 55 - 75, and he relies primarily on his eyes to receive communication, he is probably deaf. When the intensity must be 75 decibels or more before detection, the person is considered profoundly deaf (Vescovi, 1966).

In the United States, there are approximately 8 million people who are deaf to the point of suffering disability from it. There are nearly 351,000 who suffer profound deafness (Johnson, 1973). (These figures are only estimates· greater accuracy will be possible in 1974 when results will be available from the census taken in 1973 by the National Association of the Deaf.)

Misconceptions

It is incorrect to assume that a deaf person is the least handicapped of those w have some physical or mental handicap. In the National Park Guide for the Handi capped (1971), the claim is made that "Among the handicapped, the deaf visitor to the parks is probably the least disadvantaged. All... exhibits and trails are appropriately signed and marked with interpretive messages. Transcripts of audio programs and lectures have been made in some areas." The apparent assumption is that the deaf person need only read the material and he will have acquired all the information provided. Their knowledge of terms is such that most of them would be unable to understand interpretation signs, let alone a transcript of a lecture. Since the majority of deaf people communicate with sign language, they speak in pictures and they think in pictures.

Deaf people are often assumed to also be "dumb." If a deaf person is also mute, it is caused by a separate problem with the larynx and is not due to the deafness. Given that there has been no brain damage to affect intelligence, they have the same intellectual capabilities as the general population, but most are extremely under-educated. "A recent research study of deaf students sixteen or older revealed that 30 percent of them were functionally illiterate, 60 percent achieved a grade level of 5.3 or lower, and only 5 percent rated tenth grade or better in achievement" (Vernon, 1970).

Why is there such a great disparity between potential and achievement? It is mostly the result of communication difficulties. "... in its capacity to help transpose sound waves into spoken language, the hearing apparatus represents man's strongest line of communication with the world in which he lives" (Levine, 1965). Most deaf people do not learn our spoken language because they cannot hear it, and of course their ability to read is adversely affected.

Helpful Hints for Interpreters

Because of the difficulty in communication for deaf people, those who are on their own tend to stay in a world where they can understand and be understood. That world does not usually include the areas where interpretation is found. This does not mean that they should be ignored when planning interpretation. All of the people consulted working with deaf persons indicated they thought that participation in outdoor recreation would be extremely beneficial and that there is enthusiasm on the part of deaf people for trying it. However, along with the enthusiasm is hesitancy and fear because of the communication problem. Those working with deaf people feel that a program of introduction to the world of outdoor recreation is needed. Interpretation is well suited for such a program, and needs only slight modification to accommodate special communication needs.

Fingerspelling and the language of signs are used by the majority of deaf people. Fingerspelling (one hand position for each letter of the English alphabet) can be learned by a hearing person in 15 to 30 minutes. Sign language takes longer but a few simple signs can be learned quickly so that communication in an interpretive setting is possible. If the interpreter will make the effort to learn fingerspelling, at least some of the interpretive programs will be available to deaf people.

It is possible for deaf individuals to benefit from interpretation. However, the material must be presented in a way that is comprehensible to them, a requirement common to all audiences. There are several programs around the country designed to introduce deaf people to the activity of environmental interpretation. In one area, it was found that the most successful approach is to have staff of the environmental education center work with staff from a special education unit teaching deaf children. Because they have such a limited vocabulary, they were first taught the meaning of words such as "animals," "trees," "ground," and "plants." These concepts had to be constantly taught and reinforced. Then they could move on to slightly more complex concepts such as leaves, differences in trees, rocks, and so forth. Eventually, they had experienced most of the range of interrelationships involved in an outdoor environment and they had benefitted from and enjoyed their experience just as much (if not more) than any other audience (Zolomiji, 1973). In another program, several interpreters have learned enough sign language to present their programs to deaf visitors. They first learned what level and types of concepts were understood, and then reduced their interpretive stories to that level of comprehension (Lewton, 1974).

Deaf-Blindness

Facts

A rough estimate of the number of people in the United States who suffer from being deaf and blind is 3,600 children and 5,400 adults (Dunham, 1973). Much of the deafness and blindness is caused by rubella (German measles) and many children who are afflicted today were exposed *in utero* during the rubella epidemic of 1963-1965.

Some idea of the degree of the handicap can be gained from realizing that, in the total process of perception by the human being, the use of the visual sense has

been estimated at 84-90 percent. The second most extesively used sense is the auditory sense (Rothschild, 1965).

Communication is a serious problem. Many are learning to read Braille. Two other methods used are American One-Hand Manual Alphabet and the International Standard Alphabet. The American One-Hand Alphabet requires the hand of the reader to follow and conform to the formation of the fingers of the writer. Th International Standard Alphabet, which differs from the American in formation of the letters, allows the hand of the reader to remain at rest while the motic of communication are made by the hand of the writer in the palm of the reader.

If one does not know either of these alphabets, it is still possible to communi cate with a deaf-blind person. Grasp their hand (this alone makes them feel that you accept them) and print capital letters in their palm. Remember to pause between words.

Misconceptions

Not all of the senses of a deaf-blind person are impaired. The senses of smell touch, and taste are unimpaired, and since they are the only means of perception and communication, they are usually acutely developed.

Helpful Hints for Interpreters

Suggestions for the appropriate way to act with a deaf-blind person are similar to those mentioned in the section on blindness. In addition, be guided by remembering to orient the interaction tactually.

One might ask: Can a person benefit from use of a program that is designed to rely heavily on the use of the senses of sight and hearing if he can neither see nor hear? The answer could be another question: Is that program well designed? Is it designed to provide the maximum benefits to anyone using it? As a final examination, a certain professor of landscape architecture had his s dents design a formal Japanese Garden for blind persons. Designers of interpre tive programs might profit from a similar test if they would add to their desig criteria the necessity to make interpretation useable by those who can only fee smell and taste. The resultant programs would be much more stimulating, educational and enjoyable to all users than are the programs designed to rely on the use of only eyes and ears.

Because the boundaries of a deaf-blind person's world are so much more limited than those of anyone with less impairment, the benefits from interpretation can be much greater. Due to the difficulty of communication, the knowledge of deaf blind persons is usually extremely limited when compared to that of people who have all of their faculties. Any forum established to communicate information to them about some facet of the world in which they live can only be of great benefit.

Mental Retardation

Facts

A general description has been supplied by Jeanne Buchan, Field Worker at the King County Chapter of the Washington Association for Retarded Citizens:

> Mental retardation is defined as slowed development which results in individuals functioning at a lower level than expected for their chronological age. The level at which an individual functions varies according to the degree of retardation.
>
> Degrees of retardation are broken into four broad categories: mild, where academic skills and judgement are poor but the handicap may not be immediately apparent; moderate, in which lack of communication skills, poor retention and judgement make the handicap more quickly identifiable; severe, limited verbal skills, lack of understanding and poor gross motor control result in acute limitation in ability to function; profound, limited recognition, and little or no gross motor control result in lack of awareness of the environment.
>
> According to statistics (for Washington State) provided by the King County Mental Health-Mental Retardation Program: 49 percent of the retarded population are considered mildly retarded; 35 percent are mildly retarded with other handicaps; 8 percent are moderately retarded; and 8 percent are severely or profoundly retarded.

Eighty-seven percent of the mentally retarded can fit into the general population - these are the mildly and moderately retarded (Mitchell, 1973). Within the various professions working with people with mental retardation, definitions of degree of retardation will vary.

Mental retardation afflicts approximately 6 million people in the United States, and an additional 25 million are affected if you consider the families of those afflicted.

Misconceptions

A common misconception about retardation is that if a person cannot speak intelligibly, he also cannot understand what is being said to him. Frequently, there is physiological damage interfering with proper speech, but the person can understand perfectly what others are saying.

The belief that a mentally retarded person cannot learn has been one of the primary reasons that the development of such people has been so limited in the past. Recently training techniques and philosophies have changed to take advantage of the long-unrecognized learning potential most of them have, As a result, many are being helped to develop their fullest potential.

A damaging misconception is that a mentally retarded person does not feel emotions as intensely as do others with normal intellect. From all that can be determined by those working with people with mental retardation, there is no difference between them and people of normal intellect in this respect: They are just as sensitive.

Helpful Hints for Interpreters

There are no special problems with the retarded in an outdoor setting. The severely and profoundly retarded may have some ambulatory problems or forget where they are going or why (their attention span is quite limited), but they will lea if given the opportunity, and they enjoy a challenge. Those who would have trou would not be alone, and those who are alon_ have been trained to manage that pa ticular activity and will not have trouble. A field worker for the Washington Association for Retarded Citizens has taken a group of children on a week-long bicycle trip through the San Juan Islands, and another group on a plane trip to Chicago to participate in the Special Olympics. There was no difficulty other t that which would be expected with any group of children under similar circumstan If the children are on the trip, it means they can handle it.

An interpretive program can be a valuable tool in teaching people with mental retardation, who often have short attention spans and need to be involved with t subject matter in order to learn. The benefits of an interest in nature are numerous. While a retarded individual may have a very frustrating and painful t fitting into society, such an individual can find reassurance, impartiality, and many opportunities for self-development in nature. Because so much of nature is concrete and constant (the match and recall segment of learning is well-served), provides an excellent learning ground, providing the person with mental retardat with a subject area about which he can converse with anyone. But, like most learning for such a person, interest in nature is not acquired easily. Intro uct and guidance geared to the pace of the individual are necessary -- the interp ti program provides just such a forum.

The most satisfactory interpretation will be that which allows personal involvem to be able to put their arms around a tree and maybe sit on a branch will help them understand about a tree. A program can be tailored to each group by asking the person in charge to what school grade their level of comprehension is comparable and then preparing a program for a class from that grade.

Ambulatory Limitations

Facts

The number of people in the United States afflicted with some type of relatively permanent ambulatory problem is approximately 6.2 million (B.O.R. 1973). Individuals with ambulatory limitations are those who have to use a wheelchair, crutches, leg braces, canes or walkers to assist them in moving from one place to another. Their major problem is in the physical design of buildings, doors, str sidewalk interfaces, restrooms, buses, pathway surfaces, stairs, entrances to buildings -- the list is very long.

Their plight in everyday living is slowly being brought to light through their ow perserverance, and some changes are being made. Laws such as Public Law 90-480 are being passed to facilitate the intergration of all of society. This law, passed by the U.S. Congress in 1969, requires that all buildings totally or partially funded by federal funds must be designed so as to be free of barriers to use by handicapped persons. As of summer, 1973, 49 states had passed similar legislation, many of them amending it to include all public buildings.

Misconceptions

The majority of people consulted, and much of the literature reviewed during this research used "handicapped" to refer only to those who must use wheelchairs. This implies that either 1) deaf, blind, mentally retarded, or otherwise physically or mentally impaired people are not handicapped, or 2) that there is another general term to apply to these others. No evidence was found in my research to support either possibility. I am led to conclude that the public is unaware, or tends to forget, that handicaps are suffered whenever physical or mental impairment exists.

It is erroneous to assume that a person in a wheelchair will usually be accompanied by a non-handicapped person. Most people who use wheelchairs are absolutely capable of going anywere on their own, provided access to building and facilities is properly designed. Some are disabled to the point where they must be accompanied; the majority are not. If they are accompanied, it is usually for the purpose of companionship, rather than assistance.

Another misconception is the view that a person with an ambulatory limitation is also mentally disabled. If a mental disorder exists, it is usually a separate problem. Most people with ambulatory limitations have the same mental capabilities as those in the non-handicapped population.

Helpful Hints for Interpreters

Though the problems people with ambulatory limitations encounter in an interpretive situation are few, they can be completely restrictive if not provided for. These individuals need to be able to get to, and move around within, an interpretive area with a wheelchair, crutches, legbraces or a cane. That requires there be some mode of transportation to the facility to accommodate wheelchairs, no curbs in their path, the gradient less than 5 percent, and the surface of the area must be hard, smooth, wide enough to accommodate a wheelchair or the various spreads of crutches, and level (the smaller front wheels of a wheelchair tend to seek out and get caught in ruts and holes in a surface). The height of a person sitting in a wheelchair should be accommodated throughout the design of interpretive programs. Because people confined to wheelchairs must drink large amounts of liquid, restrooms and drinking fountains should be conveniently located and designed to accommodate wheelchairs. For physical design specifications see: Allan, 1973; and Mills, 1973.

There is some disagreement about how to refer to those with ambulatory problems. Some prefer "disabled", feeling that it has a less negative connotation than the term "handicapped". Others feel just the opposite. The problem might not exist at all if instead the challenge were: "Is any label necessary?"

SUMMARY

The traditional methods of interpretation have placed most of the emphasis on presentation, form and accuracy of content. These points remain important, but if the audience to whom the program is directed is not understood, the program will be a failure. There is a diversity of people found in recreation areas. Recent efforts in interpretive research have emphasized the need to include the audience as a factor in interpretive planning. This paper has been concerned with one such audience, the handicapped, and its purpose is to provide interpretive suggestions based on knowledge of their individual requirements.

One cannot conclude that because people have some physical or mental impairment, their needs for outdoor recreation, or abilities to benefit from it, are impaired. Rather, variations in interpretive approaches are required to match these unique visitors with a message. In many cases, very little modification will be required.

Blind: As only 5 to 10 percent of blind people read Braille, information can be best presented by way of sound, such as by use of cassette tape players. No special guiding apparatus is necessary; they move throughout the rest of the world without guide ropes or kickrails, and the interpretive setting is no different.

Deaf: If interpreters would use fingerspelling or some sign language, they could make some of their programs available to deaf persons.

Deaf-Blind: Because deaf blind visitors would usually be accompanied by someone who is not handicapped, no special accommodations are necessary.

Mentally Retarded: Interpretation that is geared to their particular level of comprehension and which allows total personal involvement is the most satisfactory.

Ambulatory Limitations: Facilities made accessible and navigable is all that is necessary.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
HORACE M. ALBRIGHT TRAINING CENTER
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INTERPRETING FOR CHILDREN

A recognition of the simple fact that the children of today are the adults of tomorrow is essential to the future effectiveness of the National Parks. The habits and interests nurtured by the youngsters who visit the National Parks today will become vitally important as they become adults. It is especially important to help these young people to gain an appreciation of the values that the National Parks preserve and interpret.

The way toward this goal has been paved by experts. In the last 30 or so years children have developed a peculiar kind of sympathy for wild creatures and nature through the efforts of Walt Disney and others. All manner of creatures, including ducks, mice, and woodpeckers, have slowly developed real character through the antics of Donald Duck, Mickey Mouse, and the redoubtable Woody Woodpecker. Certainly Smokey the Bear is human in the minds of many young Americans.

There is great value in this kind of anthropomorphism. These young people begin to realize, perhaps subconsciously, that animals lead interesting lives in many ways paralleling human behavior. Thereby, animals become something of value rather than a nonentity or a target.

Donald Duck and Smokey Bear are a start. The excellent work with youth groups of the National Audubon Society and many of our state and county park systems has brought sound nature study programs to many young people. Cook County, Illinois, Dade County, Florida, and the National Capital Parks provide fine, specialized nature service. Also, Yosemite, Lassen Volcanic, Rocky Mountain and other National Parks have specialized programs for youngsters as do many historic and archeologic sites throughout the Nation.

Much has been learned concerning interpretive techniques effective with young people. Much remains to be learned. Here are a few considerations that merit thought and implementation:

First of all, children do not like to be told orally or by more subtle means that they are children. Evidence of this is found in the many games that they play. Normally they assume the part of an adult whether it is a nurse, a mother, a jet pilot, cowboy or Indian. The interpreter should realize this fact and profit from it. He should

work with children as if he were working with adults--adults with a limited vocabulary and experience, but unlimited imagination, energy, and enthusiasm. Complimenting youngsters by treating them as adults can be most effective. Conversely, the fate of the interpreter who tries to place himself on the child's level may be rather disastrous. To use baby talk, to enter into the games of children or other similar pitfalls leaves a distinct impression in the young mind. It is an impression that this uniformed man, whom they had admired as a rough, tough woodsman, or something similar, is not a he-man at all. Thereby, the awe, interest, and advantage that the uniform normally provides in young minds is lost. The ranger becomes just another teacher or parent in the minds of the youngsters.

A pitfall that easily can be avoided involves referring to the youngsters as children. To many young minds this is insulting. It immediately spotlights their immaturity, an immaturity they try to forget. Use of this word at the beginning of a guided trip can alienate and lose the interest of the group for the remainder of the trip. Why not say, "fellows and girls," make them feel grown up, and avoid the pitfall.

Let the youngster feel that he is important and a real part of the guided trip, talk, or museum presentation. The senses of a child are keen. He has a questioning mind. Let him touch, smell, and feel the objects being discussed. A boy or girl long remembers the feel of a snake, wet frog, the fur of a mouse; the odor of a stinkbug or skunk cabbage; or the taste of pemmican. He may not like the sensation, but he remembers it more keenly than the description of a thousand words.

Also, it is important to ask questions, get responses, and present problems. Perhaps you can use the youngster to help guide the trip, to discover the unusual and to present his beliefs concerning the phenomena under consideration. And whether it is a guided trip, talk, self-guiding trail or a museum exhibit, it should tell a story. The fascination of young people for a well told story is widely known. If presentations become a mere inventory of facts, then attention can be most ephemeral. Rather, we should present facts and concepts in story fashion to effectively maintain the interest of the youngsters in the deer mouse, the forest, or the Civil War battleground. The story must not be a last minute simplification of a talk or guided trip that has been used effectively many times with adult groups. If it is, probably for the youngsters it will be pretty drab. To be truly effective the program must be planned and tailored specifically for the young mind. Careful consideration must be given to the pragmatics of that which works, and that which does not capture the imagination of the youngster.

In many words, all we are saying is that to deal with young people effectively you must not treat them as children. You should let them participate actively in the planned function, tell a story, and do not destroy the "Park Ranger Image." The image that you create in a young mind may persist to our advantage into adulthood.

Here are some other considerations that may prove helpful when dealing with youth groups.

1. If possible, get to know the teacher or leader ahead of time. Find out what is desired both in general content and available time for the presentation. If the group is large (more than 20 youngsters) have a teacher bring up the rear to prevent straggling.

2. At the beginning of a guided trip advise the group of what is expected of them. Be pleasant but firm.

3. Be the leader logistically and orally.

4. Deal with rowdyism quickly and firmly. Do not lose the interest and confidence of the group by excessive harshness or by being an ineffectual leader.

5. If rain or other weather conditions force the cancellation of a guided trip, have a substitute indoor program available.

6. Do not let hero worshipping little folks monopolize your time to the detriment of the overall group.

7. Provide a safe trip for your group. Carry a small first aid kit and avoid dangerous situations as presented by traffic, lightning, cliffs, poison ivy, etc.

8. Do not tell the group in advance that, "we will see a deer." Let these things come as surprises. Youngsters love surprises. They resent being told that they will see something and then the animal, or whatever, does not materialize.

9. Be alert for the unexpected and capitalize on it. The unexpected can add real life to your planned presentation. To ignore the chickaree scolding overhead and to continue talking about the early settlers is a mistake. The interest of the group is with the squirrel and you might as well turn your attention to it. Young people and adults relish life and motion. You should not ignore the important unanimated stories, but you should capitalize on life and motion as it appears.

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GETTING CONNECTED:

AN APPROACH TO CHILDREN'S INTERPRETATION

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The Sociology Studies Program in the Pacific Northwest Region, National Park Service has been directed to carry out a series of research investigations designed to assess human behavior in areas managed by the National Park Service. The major benefit of such sociological research activities is the translation of behavioral information obtained into management objectives and programs. This paper is the second in a series on interpretation directed toward the above end.

GETTING CONNECTED:

AN APPROACH TO CHILDREN'S INTERPRETATION

"...to find the human key to the inhuman world about us; to connect the individual with the community, the known with the unknown; to relate the past to the present and both to the future." (P. L. Travers, Only Connect)

While there are various definitions for interpretation, most agree that either the transmission of information to visitor publics or the stimulation of a desire to acquire information is a key aspect. Simple as it may sound, the matching of an interpretive approach and material with the appropriate audience is perhaps the most difficult challenge facing those responsible for the array of public contact programs now offered by the National Park Service and equivalent preserves.

All too often the audience has been taken for granted, misread, or simply incorrectly identified. Elsewhere several writers have indicated that the manager's conception of the visitor, who he is and what he seeks in recreation places differs from what the visitor assumes himself to be and what he seeks in leisure places (Clark, et. al, 1971). This not uncommon finding is perpetuated in the "mass" oriented interpretive programs prevalent in many recreation places - the assumption being, all visitors are alike. But, all visitors are not alike. Instead a diversity of visitor groups can be found in recreation places like National Parks. The interpretive programs offered must also vary in intent, content and approach (Field and Wagar, 1973).

The basis for assessing differences are numerous. Visitor publics vary in terms of the frequency with which they come to parks, and in previous experience with outdoor leisure places. Perhaps the most obvious difference

among visitors is with regard to age. Yet, an assessment of programs offered reveals a low number of specifically designed interpretive options for either the young or the old.

This paper is directed toward one segment of the visitor public - the children. Its purpose is to aid in "connecting" interpretive programs with them. Getting connected requires:

1. An understanding of the developmental phases of childhood growth and how they offer opportunities and limitations for children of various social and chronological ages.
2. Consideration of the importance that group life has on children, and how social groups can affect interpretation.
3. An understanding of three basic interpretive approaches which should be central to any program that deals with the children.

Any fruitful approach to children's interpretation must be based on a sound conceptual framework of the way children behave. Interpreters may ask, "Under what conditions will a particular program be exciting and effective for children?", or "How can we design an interpretive program for school-age youngsters?" The answers lie in understanding human behavior.

When examining children's interpretation it is useful to think in term of communications flow. To be connected with children, the message must pass through the interpreter, the medium of communication being used, and the social situation in which it is being delivered - all before it reaches the child.

MESSAGE → INTERPRETER → MEDIUM OF COMMUNICATION →
SOCIAL SITUATION → THE CHILD

Each of these factors has the potential to encourage effective interpretation, or to discourage such efforts. If the message is incomplete, the interpreter inarticulate, the equipment jams, the screen is torn and the light is too bright in the room, there may be a barrier to communication. If the social environment is inappropriate, the message may not be received. If the child is not developmentally mature enough to participate at the level of an interpretive program, getting connected is extremely difficult. Hence, understanding the behavior of youngsters in each developmental phase will help in providing interpretation that truly connects with the young visitor.

How Developmental Phases Affect Interpretation

This same sort of negative/positive potential can be of value in looking at the phases of childhood development. In each phase, there are characteristics that can act as limitations on getting connected and others that can act as motivators. Children's interpretive programs need to exploit those characteristics that act as motivators.

Example: If 5 year olds learn primarily through the sense of touch, then interpretive exhibits which allow tactile responses will motivate these children. Exhibits labelled "don't touch" will limit their own effectiveness.

In discussing developmental phases of childhood, many cautions must be observed. These phases are purely conceptual, and no child goes to sleep one night in the latency period to awake as a pre-adolescent. Rather, there is a continuum of development wherein physical, emotional and cognitive changes gradually occur. These changes happen at different chronological ages from child to child and vary from generation to generation.

To further complicate matters, children may be in transition from one phase to the next, or may just be developing at a slower chronological rate.

However, Figure A is useful as a rough guide to the developmental phases of childhood. As one can see, each phase includes both limiting and motivating influences. (See Figure A, Page 12)

For the pre-schooler, who is cognitively just beginning to make associations of cause and effect, interpretation of simple natural relationships can be terribly exciting. They have abundant energy and large active movements. Their interest span is short, and interpretive programs should be constructed in small sequential units. They are primarily self centered and work better individually. The pre-schooler is concerned with scale and "big and small" are important concepts.

> Example: An interpretive program that involves the children physically in a "miniature ecosystem", running and climbing up small valleys and along creeks and streams. There are natural places to hide, logs to cross, and all at a scale appropriate to the children.

At about 5 years of age, the child enters into what can be called the school-age phase. Cognitively, comparison becomes a prime mode of analyzing information. Interpreters have assumed that school-age children are interested in factual data concerning natural history. "The tree is 110 feet tall." The interest may be there, not with the data as such, but in how this particular tree measures up to the tallest tree in the area. Comparisons can make data come alive for the school-age child.

The school-age child is only tentatively beginning to form relationships with adults outside the family, briefly leaving the protection of the caring person, usually the mother. Physical growth becomes more gradual.

Physical growth continues into the preadolescent phase, which begins around the age of nine. There is wide variation in development from child to child with interests and curiosities varying even more. The pre-adolescent

is beginning to enjoy group life and is finding parent substitutes in teachers and group leaders. The credibility of the interpreter in the eyes of the child becomes extremely critical. There is a striving to attain skills and a concern with things rather than ideas.

Example: A "living history" program where groups of children could learn about frontier baking by grinding flour, stoking the oven, and eating the final product.

This concern for things rather than ideas changes as the adolescent phase begins, at about 12 - 13 years of age. There is a desire for intellectual freedom, and for authentic information with which to make independent decisions. The adolescent is struggling for independence, yet critically needs peer group approval. An interpretive program that allows for teenage leadership and self-discovery is apt to be more effective than one based on adult supervision and fixed rules.

Example: A program of volunteer environmental clean-up projects, bringing trash back from high mountain country; or teenagers leading younger children on interpretive walks.

In conclusion, the first goal in getting connected is to use the motivators inherent in each developmental phase to best advantage.

Children and Social Groups

More than any other segment of our society, children participate in interpretive experiences while in a group. A family may visit an interpretive center, a school class may take a trip to an historical site, or a group of campers may go for a nature walk around camp. Central to understanding child behavior is the social context in which interpretation takes place. One cannot effectively develop interpretive programs for children without understanding the dynamics of children's groups. Like the concept of developmental

phase, social context can act as a limitation or a motivation in connecting the message.

What are some of the variables affecting the social context of the children's interpretive programs?

1. The purpose of the group. Before other questions are addressed, it is useful to consider the basic purpose of any children's group. The purpose may be education, recreation, entertainment, or simply delivery of an agency message. The group may be used to offer new experiences to the young, or to supervise and control behavior.

   It is also important to ask who defines the purpose of such a children's group. Little league baseball is an example of a children's group whose purpose is largely defined by adults. Children quickly learn the real purpose for their group's existence and often act accordingly.

   > Example: Is the campfire's purpose to present an agency message and supervise children, or to teach environmental concepts and give kids a chance to relax and enjoy themselves?

2. Group size. Group size is an important factor. Active outdoor games may be motivators for large groups of early school age children and indoor activity severely limiting.

   > Example: It is unreasonable to plan a structured, passive program for large groups of 6 year olds. They have incredible amounts of energy, are intensely physical, and desire attention from adults. Non-constructive chaos is almost inevitable.

3. Group composition. The composition of the children's group also defines social context. Since the interpreter often has little control over group composition, interpretive programs must be flexible so as to adapt to changes in group composition. We need to ask if the

children in a particular group are currently in different phases. Or, as is more likely, are some in a specific phase and others in transition? Will these differences effect the group and its purpose?

Other variables need to be looked at also. What is the social and educational background of the children? Sex (the proportion of males to females) becomes crucial in the pre-adolescent phase and continues to influence behavior into adulthood. Partly because of urbanization and the decline of open space in urban areas, interpreters must be aware of the environmental experience of the children. How many different environs has the group been exposed to, and in which settings are they motivated or limited? Children of the city cannot be expected to relax spontaneously and enjoy wilderness environments without previous successful experiences. Fritz Redl speaks of urban children's summer camp experiences:

> City children have heard and read about storms, animals, and nature and have used these images as props in their night-mares and daydreams. What isolated contacts they have made with nature usually were in broad daylight or in the protective custody of father or mother on that car trip. Suddenly all nature is let loose on the child from town, the result is that many children are frightened at camp much of the time.

The effective interpreter will consider these variables in planning and conducting interpretive programs.

> Example: There is a group of young scouts preparing for their first campout. It is obvious to the adult leader that while most of the group enjoys group life, several "loners" are involved. The leader offers responsibility for keeping a journal of their trip to several of the loners, giving them the very needed chance each day to relax from the requirements of group life, inherent in scout trips.

<u>The second goal of getting connected is to use the social context of the group as a motivator.</u>

Interpretive Approaches

The next step in getting connected is to examine various interpretive approaches. An interpretive approach should not be confused with mediums such as films or the written word, or with schedules of interpretive activity. Rather, they are ways of programming built upon three basic modes of human expression: action, fantasy, and instruction. Let us examine each briefly.

1. Action. Children often learn by doing. They learn physical skills such as skipping and throwing by imitation and repetition. They want to be able to do things, and are not truly content with being told or shown. An impatient "Let me do it!" is a signal to the interpreter that his interpretive approach is ignoring this important mode.

Action is valuable in the development of other kinds of skills. Participation in an activity offers children practice in interacting with others, and helps them to empathize with other's emotions, an importar part of what adults consider to be maturity. Indeed, sometimes the only way for a child to understand how another feels may be to act out the rol

> Example: An interpreter is explaining to a group of school-age children that for the pioneers coming west on the Oregon Trail, winter was a hard and dangerous time. The children do not react. The interpreter asks them to act out winter on the Trail, without fresh food, warm clothes, or adequate shelter. The play acting goes on for about 5 minutes. The interpreter then continues his story, carrying along with him the children's interest and understanding.

2. Fantasy. Maybe the most powerful and far reaching mode of interpretation is fantasy. Fantasy is an intimate and personal thing. It is that region where reason and experience end and imagination begins. To the child there is a potential for fantasy within every experience. The evening campfir becomes a mysterious nocturnal gathering of witches, and only the camp directo

"lights out" can break the spell. Indeed, when modern children are confronted with a basket woven by Native Americans hundreds of years ago, we are inviting them to fantasize about a life and culture far different from their own. Interpretive displays that encourage fantasy can spark interest and involvement, even though the display itself may be quite static.

Any yet, while the children are involved in fantasy, it is seldom openly used by interpretation planners and programmers. And why not? C. S. Lewis notes:

> He [the child] does not despise real woods because he has read of enchanted woods: the reading makes all woods a little enchanted (1969, p. 215).

Fantasy plays such an important role in a child's interpretation of the world, it should be used as a motivator in children's interpretation.

3. Instruction. Instruction is by far the most accepted and expected mode of interpretation. It is the main way we teach children in our schools, and whether it be by slide show, campfire talk, or museum exhibit, one-way communication of information is the most prevalent method of interpretation.

For youngsters the importance of information is directly related to its usefulness.

> Example: To know how to identify oregon grape may be mildly interesting, but the information comes alive when it is made known that the berries can be used to stain decorations onto cloth.

To be valuable, instruction should concentrate on providing information that can be directly incorporated into the lives of the children.

For children, these modes are intimately related, with each offering strong motivations. The effective interpreter weaves them all together, moving from one mode to the other as the individuals and group require.

> Example: A group of coed 7 year olds are learning about salmon. The interpreter begins by showing the children exciting pictures of the large fish, and asks if they have ever seen one. The children are told that salmon can often weight nearly one-half of what they weigh, and can they imagine being such a large fish in a shallow stream ? Could they show what it would be like to be a salmon swimming upstream? "What happens if there is a dam?" asks the interpreter. The children act out climbing a fish ladder, if possible on a small-scale ladder built for such activity. The play acting goes on for several minutes. The interpreter tells the children the rest of the story about the salmon's life cycle. It is mentioned that no one understands why the salmon can return to the same stream where they began life as eggs. The children are asked: "Can you think of a reason?

Obviously, using these conceptual tools requires a great deal of prior planning on the part of the interpreter. Given the complexity of the groups, he or she cannot be expected to utilize every possible motivator in each interpretive encounter. What is needed is a systematic planning process for children's interpretive programs.

In another paper we shall present such a process in terms of an experimental interpretive program introduced at Fort Vancouver National Historical Site.

"Getting connected" seemed appropriate for the title of this paper because many of the ideas presented germinated while reading P. L. Travers' article on children's literature, "Only Connect." (As if it were a simple task, only to connect with children). There are some important things to consider here: the developmental phases of growth, the social context of the children's group, modes of interpretation - action, fantasy and instruction. Books, papers and articles that discuss these concepts can aid in getting connected. But alone, this understanding and discussion <u>cannot</u> create enjoyable children's programs. Getting connected ultimately requires creativity

love of children, curiosity and an ability to look upon the permanent role of "adult" with bemused suspicion.

After all, how would you like to be 'living in a land run by giants without a dime to your name'?

Developmental Phase	Age	Physical Development	Cognitive Development	Socialization	Adult Relationships
Pre-school	2-5	Growth rapid, but is slowing down Abundant energy Active movements Males and females develop at slightly different rates - equalize at about 5	Developing memory, vocabulary Making associations of cause and effect Primarily learns through the senses	Self centered Bases relationships on what he/she can "get" from others	Primarily the caring person, usually the mother
School-age	5-9	Growth more gradual Finer muscle coordination, yet active movements still required	Interest span increases Comparison becomes important	Strong group loyalties with pair relationships very important	First break from home Begins relationship with other adults
Pre-adolescent	9-12	Desire fine muscle coordination Strives to attain specific skills Wide variation in development	Concerned with things rather than ideas Ability to articulate curiosity	Learning to cooperate and enjoy group life	Need to find parent substitutes in teachers and group leaders
Adolescent	12-17	Onset of puberty Rapid growth and development and lack of fine motor coordination Awkwardness due to growth Girls developing faster than boys	Interested in ideas Seeks specific and authentic information Desire for intellectual freedom	Needs peer group support Testing tentative adulte relationships	Conflict with adults Desire for independence

Adapted from Social Group Work Practice. Gertrude Wilson and Gladys Ryland, 1949.

INTERPRETATION FOR THE ELDERLY: A STUDY OF THE INTERPRETIVE INTERESTS OF RETIRED NATIONAL PARKGOERS*

Gordon Bultena, Donald Field, and Renee Renninger**

INTRODUCTION

The interpretation of natural and historical phenomena is a prime objective in the overall land-management programs of such public agencies as the U.S.D.A. Forest Service and the U.S.D.I. National Park Service (Eddy, 1969; Everhart, 1972).[1] Yet despite the considerable financial and manpower investments of these agencies in interpretive programming, there has been little effort to objectively assess the accomplishments and/or effectiveness of these programs.[2] In defending interpretive efforts, reference usually is made to the numbers of people served, to responses received from satisfied visitors, and to the absence of adverse public feedback. While these measures partly illuminate the degree of goal attainment, they are seriously deficient in that: (1) persons attending interpretive programs or viewing exhibits may be deriving few or no benefits from their experiences, or could better benefit from alternative presentations, (2) testimonials of satisfied users may project a seriously biased picture of the feelings of the larger clientele system, and (3) dissatisfied visitors may not be sufficiently motivated to formally register their complaints about interpretive programs, let alone be able to pinpoint sources of concern.

An even greater information deficiency exists in the fact that there often is little empirical data on the characteristics, activities, motivations, and interests of park visitors. Thus interpreters are commonly forced to rely on impressionistic information in the planning and implementation of their programs.

Important to an objective appraisal of the interpretive interests and needs of recreational visitors is the fact that the national forests and parks today are serving a diverse clientele. It has been found, for example, that national parkgoers are drawn from all age and social-class levels, from several racial and ethnic groups, and from rural and metropolitan areas; they display widely varying levels of education, unique cultural and experiential backgrounds, and diverse motives for visiting parks (Cheek & Field, 1971; ORC Caravan Surveys, Inc., 1968). Despite this diversity, there has been a tendency for public agencies to plan programs for the mythical "average visitor," and thus to lose sight of, and perhaps give inadequate attention to, the unique interpretive needs and interests of visitor subgroups (Field & Wagar, 1973).

Findings are reported in this paper from a study of the interpretive interests and involvement of one segment of the parkgoing public - retirees. Although older persons have been found to be less dedicated parkgoers on the whole than middle-aged and young persons, retirees who visit national parks often do so with considerable frequency and make relatively long stays.

It can be anticipated that older persons will become an increasingly important audience for park interpretive efforts given their growing numbers in the national population, earlier retirement, increased affluence, and more social legitimation of their participation in leisure-oriented lifestyles.

An important facet of interpretive programming for retirees, but one that could not be examined in this study, is the extent to which park interpreters hold stereotypic views about older persons. Numerous, often negative, stereotypes abound in the general population. These include views that older persons: (1) share similar attitudes and life situations, (2) are conservative, rigid in their thinking, and slow to learn, (3) are in poor health, (4) have inadequate financial resources, (5) prefer passive activities, (6) are socially isolated, and (7) have low morale (McTavish, 1971).

While some older persons display these characteristics, many do not. In fact, our observations of aged national parkgoers suggest that most are in relatively good health, vitally interested in becoming better informed about park phenomena, physically active, socially involved, and have high morale, in clear contrast to the stereotypes. The extent to which park interpreters accept the veracity of the stereotypes, however, will greatly affect both the nature of their interpersonal contacts with older visitors and their perceptions of appropriate interpretive formats for this age group.

STUDY DESIGN

Information was obtained in this study from behavioral observations of, and interviews with, older persons (aged 60 and older) visiting Olympic, Rainier, and North Cascades National Parks. A sampling design was employed whereby sites in each park were repeatedly visited in 1975. Data were obtained on older persons' attitudes and behaviors germane to their participation in organized interpretation programs (i.e., nature walks, talks, demonstrations, campfires). A total of 105 interpretive programs in the three parks were observed for purposes of obtaining information on the behavior of older participants. Opinions about these programs were solicited through informal interviews with participants.

Interviews also were conducted with 100 older persons in park campgrounds to elicit their observations and feelings about ongoing interpretive programs and to identify their interests and personal needs for interpretation. This camper population was felt to comprise a viable audience for park interpretive efforts, but it appeared to us that many older campers were not availing themselves of existing interpretive opportunities. Because of financial limitations, interview data were not collected from older visitors using local accomodations or from day users, except as they were contacted while participating in the formal interpretation programs.

FINDINGS

Personal Characteristics

Retired parkgoers displayed several common characteristics. Most were relatively young, recently retired, and despite problems with chronic disorders, saw themselves as being in good health. They had led active lives following their retirements and displayed very positive attitudes toward their present life situations. They were high spirited, adventurous, and desirous of acquiring more knowledge about the historical and natural features of the parks. All were strongly committed to conservationist goals, and, specifically, to the necessity of preserving parklands for future generations. They diligently sought to obey park regulations and showed disdain for persons who would violate rules or engage in depreciative behaviors.

Most retired persons contacted in this study were visiting the national parks as couples, with or without other friends or family members. Widows, widowers, and singles were most often observed in multi-generational groups or peer groups in day-use areas or in organized commercial tours. Although the most common party-type was the senior generation couple, numerous two and three-generational groups (comprised of grandchildren, children, siblings, younger friends, and age peers) were observed. Group composition was important to involvement of the aged in park interpretive programs, as is later discussed.

The activities of these older respondents, unlike many of the younger park visitors, were generally unhurried and open-ended. Although most had basic travel itineraries, they did not feel bound by these schedules and opted to stay in campgrounds until local sightseeing and recreational opportunities had been exhausted.

An important facet of campground culture was the frequent formation of friendship ties and helping patterns between age peers. Ephemeral social communities evolved as new parties arrived in the campgrounds and others departed. New arrivals typically were greeted by age peers and introduced around. Although striking differences in personality and degree of sociability were observed, retired persons consistently regarded each other with mutual trust, respect, and understanding. Reciprocal exchanges of information, services, and goods were common. In some instances, this took the form of assisting age peers on the park trails by carrying personal items or aiding their passage over difficult terrain. Nearly all respondents, however, were in sufficiently good health to navigate the self-guided walks and many sought out the more demanding front-country hiking trails.

Often the sightseeing activities and day-trips of respondents were coordinated with those of new found friends in the sharing of transportation. In some instances, new friendships were apparently maintained beyond the park setting as visitors integrated their future travel plans and/or arranged for home visits. A further finding was that many of the aged were involved in larger social networks that provided them up-to-date information on highway conditions, places to eat, things to see, and desirable places to camp. One result of this "grapevine" is that many older visitors became

well informed about the content of interpretive programs and even the names of the best naturalists, prior to their arrivals in the parks.

Attitudes Toward Interpretive Programs

Observations of the daytime interpretive programs (fixed displays, talks, and nature walks) revealed that older persons regularly made up from 25 to 35 percent of the audiences. This figure jumped to about 65 percent at some popular sites. Interestingly, the representation of older persons in these programs was consistently underestimated by park managers, suggesting that the numerical prominence of this user group is not correctly perceived by officials.

While most of the respondents rated their participation in interpretive programs as enjoyable, in substantial numbers they also expressed concerns that the program formats were not effectively meeting their needs. A common criticism was that the programs were primarily geared to first-time visitors and often were superficial and uninformative. Because of longer stays, and more extensive parkgoing experience than many younger persons, some older visitors were already familiar with current interpretive content. Also, given their strong environmental commitments and prior knowledge of park flora and fauna, many sought more in-depth and challenging presentations than they felt were being provided.

The experiences of older persons on the nature walks suggested some additional problems. First, older persons sometimes were left behind, especially on elevated trails, as interpreters and younger visitors rapidly proceeded from one observation site to the next. Interpreters usually appeared oblivious to this problem. It was not uncommon for older persons, just catching up, to find that the formal remarks had been concluded and the group was prepared to move on. Older persons also tended to be shuffled to the fringes of their groups as younger, and often more aggressive, members sought access to park naturalists. Older persons sometimes experienced difficulties hearing in these situations, and in gaining the attention of interpreters to ask questions.

A second complaint was that the groups tended to be too large for sustained wildlife observation and for personal interaction with naturalists. Finally, the groups sometimes were seen as affording too little opportunity for members to interact between themselves. The respondents saw opportunities for comradery with other visitors as a particularly desirable, but often unrealized, by-product of their participation in formal interpretive programs.

Evening slide presentations and campfire programs held mixed appeal for the older campers. Some felt that the information presented was superficial and redundant; they resented disruptions of young children, and/or they felt the programs conflicted with their activity schedules. As regards these schedules, it was not uncommon for the respondents to be early risers and to retire early, or to devote evening hours to interaction with friends or to the pursuit of hobby or camp-maintenance activities.

The composition of the travel parties was important in the decisions of older persons to participate in evening programs. When grandchildren

were present, the retirees took considerable satisfaction in escorting them to evening programs and in sharing their excitement with a new activity. In fact, retirees were found to devote considerable time and effort to acquainting their grandchildren with camping and outdoor craft skills. In the absence of grandchildren, the evening interpretation programs held lesser attraction for respondents, although they were frequently viewed as a vehicle for becoming acquainted with other campers.

SUMMARY AND CONCLUSIONS

Several conclusions about the efficacy of extant interpretive efforts for retirees are suggested by this study. Although we have limited our observations to three national parks in the Pacific Northwest, it is likely that the findings have relevance for interpretive programs in other parks as well. It was revealed:

1) That the prevalence of older persons in daytime interpretive programs was considerable, but that their numbers were regularly underestimated by park officials.

2) That existing program efforts, while often positively evaluated by the respondents, were not fully congruent with their felt information and experiential needs. Often retirees were already familiar with the information being presented. Also, because their visits were generally longer than those of younger people, many older persons had exhausted the range of interpretive offerings in the local area.

3) Special needs of the retirees on nature walks often went unobserved by interpreters and resulted in dissatisfactions being informally expressed about this activity. The large size and rigid pace of interpretive groups were points of particular concern.

4) An important motive for older persons participating in interpretive programs was the opportunity for interaction with others, expecially age peers. Yet the formal and structured format of these programs seldom provided the time or opportunity for much interpersonal contact.

5) The content and scheduling of evening programs often precluded active participation by older persons, for several reasons.

INTERPRETATION FOR THE AGED

Given the numerical prominence of older persons among national park visitors, it appears that their special needs and interests should be more systematically solicited and carefully considered in the planning of park interpretive efforts. Several suggestions which follow regard [illegible]

possible directions of interpretive programming for this age group.

First, the image that park interpreters have of older visitors should be systematically surveyed. As we earlier noted, there are many stereotypes about older persons that if adopted by interpreters, could produce improper programming for this user group. In-service educational programs may be required to sensitize park personnel to the characteristics, felt needs, and interpretive orientations of their older visitors.

Second, considerations might be given to providing age-graded programs designed exclusively for older persons, as is now sometimes done with children. These programs could effectively speak both to the unique information needs of the older visitors and could also be designed to facilitate opportunities for the desired social interaction with age peers. Age-graded programs also would remove a frequent irritant of age-integrated programs (i.e., disruptions by young children).

Third, new and more in-depth interpretive presentations should be prepared for repeat visitors who often have considerable knowledge about park history and natural ecosystems. In some cases, these presentations could be keyed to written materials that might be available on loan in the parks.

Fourth, comprehension of interpretive materials by the older population might be enhanced by more reference to aging processes and life-cycle patterns in nature (e.g., to geological time, forest succession, lake eutrophication). The use of "aging" as a focal point for presentations would assist audience comprehension of the materials and better sensitize older visitors to the fact that life-cycle patterns are as much a part of the functioning of natural ecosystems as they are of social systems and human life.

Fifth, the older visitor represents a virtually untapped resource for interpretive programming. Some persons probably have made visits to the park in its formative years, have had unusual park experiences, or have insights into park history that could be shared with newcomers. Perhaps "oldtime programs" could be periodically scheduled at which audiences would be encouraged to reminisce and share experiences about their earlier visits to the parks.

Sixth, some older persons have hobbies (e.g., painting and photography) that might aid others' appreciations of park phenomena.[3] Special interpretive programs or "craft fairs" could be held at which hobbies could be displayed. In some instances, older visitors might be encouraged to participate in special living history programs in the parks.

Finally, greater use might be made of "roving rangers" to meet the interpretive needs of older visitors. These rangers could partly utilize the social networks that form among retirees to gain access to this population. By deliberately seeking out retirees, interpreters not only would be able to better ascertain their special interests and needs, but also to identify the personal skills and resources that they might bring to a broadened and more dynamic interpretive programming in the parks.

FOOTNOTES

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[1] Interpretive programs also have been widely used as a means of securing greater public support of, and compliance with, agency resource policies (Schlamp, 1976).

[2] Recent scientific studies of interpretive programs include: Wagar (1972); Washburne and Wagar (1972); Shiner and Shafer (1975); Shettel (1973). The field of conservation education faces similar deficiencies of scientific information on the relative success and/or efficiency of programs (Hendee, 1972).

[3] One aged respondent, for example, was found to have an extensive set of slides on local birds that had been photographed in their natural habitat. The photographer, who was a self-educated ornithologist, had presented numerous programs on birds to groups in his home community.

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AN INTERPRETER'S GUIDE TO RETIRED VISITORS

Population trends indicate that persons 65 years and older who are retired from employment are increasing in the population.

- 1900, there were 3 million Americans 65 years and older, comprising 4 percent of the population. Two thirds of older men were working.
- 1970, there were over 20 million persons 65 years and older constituting 10 percent of the total population and the proportion of those working had dropped to 1 in 4.

If these population trends continue there will be an estimated 28 million older Americans by the year 2000, and an increasing percentage of these persons will not be working.

Another significant trend emerging in relation to retired visitors is that many retirees found in national park campgrounds do not consider themselves campers or "wilderness nuts." In contrast many referred to themselves only as "travelers," "gypsies" or "nomads." They bring their homes with them and campsites become temporary homesites. Answers to questions: "What are retired persons doing in campgrounds if they are not camping?" and "What implications does this information have for interpretation?", will be answered later in this handout.

At any rate, as a result of these trends, the proportion of retired persons visiting national parks and other areas will in all likelihood increase significantly in years ahead. Thus, it is important to know something about retired visitors and how interpretation can be most effectively accomplished for this visitor group. The next section of the handout will discuss some ideas about How not to think about retirees. This will be followed by some ideas about How to think about retirees and some aids for accomplishing that task through interpretation.

HOW NOT TO THINK ABOUT RETIREES

BIOLOGICALLY

Research on biological aging processes indicates that for the most part, functional declines occur in most systems of the body which are characterized by losses in vigor, strength, speed, endurance, and energy reserves; a decreasing ability to reestablish homeostasis following periods of stress or exertion, and a possible increased susceptibility to shock. It is important to note however that aging is not an abnormal condition but is part of a continuum of change which begins at conception and ends with death. It is important for interpreters to understand that unlike early developmental phases of childhood and adolescence, a great deal of variability exists in late life aging processes. Retired persons do not experience phases of aging. Changes occur with great variability within the individual (that is, the kidneys of a 70-year-old may be functioning as well as those of a 60-year-old, while his or her heart is functioning like that of an 80-year-old); so that aging within the body does not occur at a uniform rate; as well as between individuals. One person at 65 years may run 2 miles

each day while another may be senile. Thus, biologically retirees are not all alike, they are not a homogeneous group. Interpreters should not attempt to evaluate the physical well-being of retirees but should give accurate descriptions of trail conditions and interpretive activities. One crippled man and his wife extended their stay at Mount Rainier National Park to take advantage of the fine hiking trails! Most retired persons know very well what their physical capabilities and limitations are. Let them decide.

PSYCHOLOGICALLY

Research on psychological aging processes may surprise you.
— intelligence. While cross-sectional studies show age decrements in intelligence, longitudinal studies do not. Why? It turns out when the same subjects are tested over many years they show a superior performance in their 50's than they had in their 20's! What cross-sectional studies tell us is that each successive generation is smarter than the last, and each generation to follow will be smarter yet. However, after spending a summer living with and interviewing retirees I can assure you that each generation is not wiser than the preceding one. Do not think you are wiser than your retired visitors! Also note that there is a great deal of variability in intellectual performance. Some persons improve in performance from ages 70 to 84 years while others decline in performance between ages 20 and 30 years. Most retired visitors in leisure settings function very capably intellectually, as experience will tell you.
— learning. Research on learning indicates that when adequate time is given or in self-pacing situations the performance of older persons is only slightly inferior if at all to that of younger persons. Motivation is an important factor for older persons in learning situations. Older persons are much less inclined to learn or memorize material which is irrelevant for them than younger persons. Do not include irrelevant information in your interpretive presentations to retirees.
— memory. Research clearly demonstrates a decline in short-term memory with age. Without question, the ability to recall material from short-term memory or memory minutes old declines markedly with age. For interpreters there are 2 implications here:

1) Present material clearly, slowly and precisely; do not rush your presentation;

2) If older persons ask the same questions repeatedly do not become annoyed or impatient. Answer questions each time, clearly and courteously. Long-term memory on the other hand, is considered to be well maintained or preserved with age. Reminiscing is an activity related to long-term memory, and may be of great use to the interpreter in visitor participation.
— senses and perception. There is no other area of research on psychological aging processes which so clearly indicates a decline in function with age. Decreases in sense and perceptual capabilities may seriously impair social relationships and enjoyable uses of leisure time. Older persons may often times appear uninterested when the problem actually lies in their inability to understand what is being said. Do not misconstrue the meaning of their behavior. Do pay attention to visitor responses - you may learn something Interpreters should be aware that these isolating impairments may exist for

some older visitors. For this reason it is particularly important to incorporate as many of the special senses - sight, sound, touch, smell, taste - into interpretive programs as possible. Use of more than one of the special senses at one time facilitates learning and effective communication with older visitors.

As seen from the above discussion, psychological aging as in biological aging, has no distinct phases which occur in all persons at a uniform rate. In fact research on the human personality indicates overwhelmingly that as human beings age they become increasingly different rather than similar. That is, 20-year-olds are likely to be much more similar than 65-year-olds. Do not think retirees are all alike. Accordingly it would be well to emphasize variety in programs designed for older persons.

Another important point about any research on aging which says old people have a decreased capability for thinking, remembering, or perceiving is that, what a test measures, many times are minute differences in performance between young and old. If at age 30, an individual is able to produce 40 words in a 3-minute period, but at age 70 he or she can only produce 36 words in that same period, it is doubtful whether these statistically measured differences will be perceptible to the interpreter or to the older visitor. Do not place restrictions on your creative ideas for interpretation for retirees. You have as many options available with them as you would have with children.

SOCIOLOGICALLY

Misconceptions and negative stereotypes abound for older persons and there are several reasons why interpreters should be careful not to include such attitudes in their interpretive presentations or in other communication with the visiting public:

1) As previously noted retired visitors are not a homogeneous group; not biologically, psychologically or socially.

2) Retired visitors to parks are not a representative sample of the total aging population and the negative stereotypes are even more ill-fitting than they would even normally be.

3) Interpreters who hold negative stereotypes are doing an injustice to their profession, as well as to a significant portion of the visiting public with whom they come in contact.

Included in the following are a list of negative stereotypes and myths regarding older persons. This list is being supplied simply so that interpreters will know how not to think about retirees. Each person reading this list may quiz him or herself on whether or not they believe any of these misconceptions to be true. If you should find you believe any of these myths to be valid, simply change your thinking (or prejudging) and become a better interpreter!

1) Retired persons are old, non-functional, worthless human beings. From a social standpoint retirement is a mechanism by which the job market may be continually replenished with new blood. Unfortunately, those persons

who are removed from the economic sphere have been arbitrarily and artificiall classified as old, in justification of their removal. Traditionally as one reaches age 65, he or she has arbitrarily been removed from the job market and artificially classified as "old" or non-functional; has been deprived of social status and acceptable economic benefits; and like other minority groups, retired persons have also accepted the negative image that they are worthless, non-functional human beings and when that happened they in all probability died or became senile and then died. However, this image is changing for many retired persons.

Do you remember the question I left you with in the second paragraph of the first page of this handout? The first question was: "What are retired persons doing in campgrounds if they are not camping?" They are evolving into a new social role or leisure lifestyle which has enabled them to take up a nomadic type of existence, carrying their homes with them and turning every stop over into a temporary homesite. This new leisure role for retirees is a positive response to a negative social act of retiring them into a status of worthlessness. This leisure role is a means by which retirees may gain social acceptance while at the same time engage in a personally satisfying way of life.

For most of us leisure use of time is defined as that portion of time which remains when work and basic requirements for existence have been satisfied; or it is a temporary exemption from work or duties. These definitions are applicable to nearly all park visitors. They come to engage in leisure activities or recreational purusits duirng a temporary exemption from work or school. For retired persons however, this definition does not hold. Leisure functions as an end in itself; the pursuit of self understanding and expression of self - of accepting joy and seeking pleasure are an end in themselves. In contrast to other adult members of society leisure no longer denotes a kind of behavior or activity enjoyed for a specified period of time, but is representative of this new style of living mentioned above: the leisure role. In answer to the second question I left you with on the first page: "What implications does this information have for interpretation?", the answer is 5-fold:

a) This information enables interpreters to remove any negative stereotypes from their thinking;

b) Retirees, because they have brought their homes with them in many cases, engage in many activities, hobbies and the like that may not normally be associated with a campground or beach setting. For example, many tinker with tools and make toys and gifts, others enjoy hobbies like knitting, painting, crocheting and sewing, playing cards, reading and writing. There may be some unique opportunities for different interpretive activities that would not be open with other groups of persons, which could incorporate some hobbies and other interests.

c) Retirees have potentially more time to enjoy, to get to know a place, to learn about natural or human history and therefore tend to plan activities with more spontaneity than other visitors who are on a more rigorous schedule. Interpreters may be able to plan a variety of activities for "extended stay" visitors.

d) The setting may have a different meaning for retirees than for other visitors. It becomes a temporary neighborhood or community and many retirees are interested in developing social relationships with others who hold similar values or enjoy similar activities and who have leisure time available to them, which generally means other retirees. Such sociability could possibly be enhanced through interpretation.

e) When retirees attend interpretive programs they do so usually to learn something or because they are genuinely interested, not because they simply choose to pass the time or to be entertained. If they are not interested they can just as easily walk around the campground, lounge at the campsite or engage in self-directed activities that are personally satisfying and enjoyable.

Through the leisure role mentioned above retired persons are learning that they are <u>not</u> "old", non-functional, worthless human beings. They are learning that they do not have to be economically productive or be training themselves to be economically productive to be worthwhile human beings. They are no longer believing this particular social model. In fact the personal act of retirement is allowing them the freedom to really enjoy themselves. Thus, many have <u>retired early</u> for the sole purpose; <u>To Enjoy Life</u>. This is why I do <u>not</u> refer to them as old timers. The term is not befitting a 58 year old retiree, for example. The term also implies that the person being referred to is "out of time" or "out of fashion" when in fact those who are aging successfully (that is, who are maintaining a high level of independence and mobility which gains them social acceptance; and who are able to fulfill their lives in a leisure role which brings them personal satisfaction and enjoyment) are <u>pioneers</u> for all of us who will follow and who must also adapt to this newly evolving social role of retirement. It is important for interpreters to know that most retirees visiting parks on their own volition, are members of this pioneer group who are aging successfully. Do <u>not</u> think of them as old worthless or non-functional.

2) The second misconception about older persons is that <u>older persons do not learn</u>. As previously stated the literature indicates that there is little evidence to substantiate such a statement. Older persons do learn equally as well as younger persons although reaction time is slower.

3) <u>Most older persons are sick, friendless and without resources.</u> Research confirms that most people 65 years and older are functioning well physically and mentally. They look first to themselves and their own resources for the means by which they may live out their lives in dignity and self respect. Only 5 percent of the elderly are institutionalized.

4) <u>Most older adults are handicapped by chronic illness.</u> While many older persons are plagued with chronic illness they view their health in terms of their <u>functional capacities</u> and not disease.

5) <u>Older persons are not able to make their own decisions.</u> Freedom of choice is extremely important to older adults and this should be recognized as a means to <u>successful</u> interpretive programs.

6) <u>Old age is second childhood.</u> Intellectual, learning, and other abilities are remarkably stable in older populations. This age group deserves the same respect, courtesy, patience and understanding as any other age group.

7) In general, the older adult population have low morale. Although the evidence for this stereotype is mixed, it certainly is not true for retired visitors in parks. Research seems to indicate that there is little change from middle age on, and that happiness or depression experienced is governed by patterns established during earlier developmental stages.

8) Older persons use their time unproductively. As previously discussed, in American society high values are placed on gainful employment and productivity, and necessarily those who are no longer productive economically, must face the stigma of finding new respect outside the economic sphere. Many retirees are successfully adapting to a leisure life style, evidenced by the large numbers of those retired early that were found in park settings. Research also indicates that there is an increase in hobbies after the age of 50 years and a decrease in mass media activities.

9) Most older persons lose contact with their families. Recent studies do not substantiate this. Most older persons maintain frequent contact with their children close by and are seen on special occasions by sons and daughters living considerable distances away. Observations made during this study would also concur with those above. The majority of retirees contacted in this study, indicated that they often take 1-2 grandchildren camping for a week end to 2 weeks at a time. The basis for many social groups found in park settings which included retirees included other family members as well.

10) Older persons are a homogeneous group. This myth has already been dispelled in previous sections of this handout.

11) Retirees only come to national parks before June and after Labor Day in order to avoid people. This belief although widely held, was unfounded in this study.. The numbers of retired persons was significant throughout the season. Certainly retirees are more conspicuous during off-season periods, since leisure time is available to them all year round. Moreover, the motivations for visiting national parks during all times of the year varied as greatly as their interests and activities. "Avoiding people" is one motivation they share with college-age people who enjoy the national parks most when they are least crowded and yet, college-age persons are rarely if ever accused of avoiding others.

Now that I have given you information on how not to think about retirees, here are some ideas about how to think about retirees, as well as some aids which will help you accomplish effective interpretation for them.

HOW TO THINK ABOUT RETIREES

BIOLOGICALLY

Research on the physiology of exercise and aging has found certain types of exercise to be very compatible with the biological needs of older persons. In a controlled atmosphere, older persons have been found to show improvement in physical well being equivalent to that achieved in younger persons. In summary, physical exercise can bring improvement to the cardiovascular system, the respiratory system, the musculature, body composition, lowering of the blood pressure in persons with a high blood pressure while lessening the risk of developing coronary heart disease and in

general, resulting in a more vigorous individual who can relax more easily. The type of exercise most conducive to conditioning older persons is rhythmic exercise of large body segments such as is found in walking, jogging, running, or swimming. Do encourage older visitors to walk and do allow them to judge their own capabilities and limitations.

PSYCHOLOGICALLY

Following is a brief resume on learning aids for older persons which will be most helpful for interpreters.

-- Present information in a well organized manner or give instructions in how to organize the material. Older persons seem to be at a particular disadvantage if they must organize incoming information themselves. This will aid them in indexing and categorizing information.

-- Do ask older persons to link ideas or words with either a mental picture or meaningful phrase or sentence. These mediational techniques help them to highlight and associate. These linkages may be verbal or visual images; both are equally effective for older adults.

-- Do present material in a "supportive" rather than a "challenging" manner. This will aid older persons in learning and retaining information.

-- Do supplement visual techniques with either passive auditory augmentation (the interpreter speaking, visitors listening) or active auditory augmentation (older visitors verbally recognizing visual stimuli presented). Use of more than one sensory mode stimulates learning in older adults more so than in younger persons.

-- Do use a "discovery method" of instruction by which older adults deduce from given facts or information, the correct association to make. Older persons learn and retain more than younger persons in using this technique.

-- Do provide relevent, interesting, and meaningful information to older persons.

-- Do allow older visitors to learn or absorb the information at their own pace.

-- Do encourage older visitors to engage in physical activities which do not require hurried snatching movements.

-- Do encourage older persons to engage in activities all year round.

-- Do encourage activities which place greater emphasis on accuracy rather than speed.

-- Do utilize long-term memory and reminiscing behavior in visitor participation. Make no demands on short-term memory.

SOCIOLOGICALLY

In the previous section it was mentioned that retired visitors to parks are not a representative sample of the total aging population and some of their characteristics may be important for interpreters to know. In general, they are young, healthy, mobile, independent, caucasian and married. Outside a kinship network they are similar to others their own age in that they appear to be socially segregated from persons in young generations.

--Many retired persons in parks have retired early in order to enjoy life. Less than 2 percent of the sample had been retired 10 years or more. Some parents of retirees were in the parks!

-- Retired visitors driving their own vehicles are in relatively good health for their age. Although most older persons have one or more chronic illnesses, they see themselves as functioning capably.

-- Most older visitors to parks enjoy a high incidence of independence and mobility.

-- All older persons seen in parks in this study were caucasian, although other nationalities were represented.

-- Nearly all retired persons contacted in this study were visiting national parks as couples or groups of couples. Widows were rarely present except on tour groups or with a child's family.

-- All retired persons contacted and observed in this study were conservation oriented. There was a conscientious effort to abide by park regulations. Many observations were made of retired persons picking up litter in a campground, carrying sink disposal to a dumping station, cleaning picnic tables, and in general leaving the campsite tidy and neat. Those observed using open fires for cooking and evening enjoyment kept their fires at a reasonable size. The one noted exception to this modal bahavior was the feeding of small birds and animals. Although this was an unusual occurrence, it often was done in the presence of grandchildren.

-- The attitude towards life of all retirees interviewed in this study was overwhelmingly positive. The same desire for life, delight with nature, creative self-expression, and high anticipation for new adventure that is associated exclusively with youth, was exemplified by this age group.

-- Although these persons hold much in common with young adults, at least in terms of activities enjoyed, they rarely if ever are found together outside a kinship network.

Because campgrounds become temporary residential areas retirees bring certain community values with them such as cooperation, hospitality, respect for others and pride in their surroundings.

Many retirees enjoy socializing with others. Some friendships founded in park settings last for the duration of stay in a campground while others continue indefinitely. Often times older persons will gather in friendship groups which are spontaneous and unplanned gatherings. Often times the persons involved are not traveling together, are not related and were not acquainted prior to contact in the park. Bicycles, besides vehicles for exercise and recreation are used by many retirees to familiarize themselves with an area and meet others.

One important motivation for using federal camping areas by traveling retirees, is to stretch the social security check to the end of the month. Nonexistent entry fees and minimal overnight fees, make campgrounds a viable alternative to expensive private areas.

Retirees visit parks in many different types of groups, but a primary reason for these social gatherings is to be together as a group. Different types of groups observed in this study were as follows:

-- Multigenerational groups including children
extended families
grandparents and grandchildren

-- Adult groups without children
Retirees with adult children
Retirees with other adults, usually in peer groups.

Whether or not children were present could make a significant difference in the types of activities enjoyed or in the length of stay. Because people come to leisure places in social groups it is important to consider the type of group when planning interpretation. Watch what activities people enjoy in groups.

-- Do plan interpretive activities for grandparents and grandchildren to participate in together.

-- Do plan interpretive activities for adult groups. Adult groups spend all leisure time together as a group.

AIDS FOR INTERPRETATION FROM INTERPRETATION

The setting should provide a large number and variety of options based on: type of social group, length of stay, varying interests and hobbies, degrees of sophistication in presentation of material, style of camping, different psychological and biological capabilities, changing seasons and on varying degrees of visitor participation as well as variety in agency-sponsored activities and self-directed ones.

After participating in a variety of interpretive programs, it became immediately apparent that conducted walks, day-hikes, and demonstrations were most successful when the visitor groups were of moderate to small size (10-15 people). Advantages for small groups were as follows:

-- The group was very informal and sociable, and social interaction among all members of the group including the interpreter was enhanced.

-- The vegetation along different stopping points of a trail is not severely denuded or trampled, as it is in large groups.

-- All members of the group have a better opportunity to hear what the interpreter is saying. Retired persons were invariably observed graciously allowing others to step in front of them while they themselves stayed in the back where nothing the interpreter was saying could be heard.

-- On some trails with moderate to steep inclines older persons were left behind. When they finally reached the stopping point the interpreter had finished with what he or she was saying. This was observed in all 3 national parks in the northwest. In smaller groups this does not occur as readily because the interpreter "knows" the faces and in some cases the names of her or his group.

-- Visitors and interpreters alike have greater opportunities to ask questions, in smaller groups. Who cares to shout out a question to the interpreter when there are 30-60 people in front on the trail and the interpreter becomes nothing more than a bobbing hat up ahead?

-- Opoortunities for viewing birds and wildlife increase in smaller, quieter groups. Large groups have the same impact on wildlife as an unleashed dog has: rousting it out in all directions and causing it to flee the area!

The numbers of park visitors could be limited with:

--the use of a sign-up sheet for certain interpretive activities;
--the use of stand-by interpreters when large crowds are anticipated;
--interpretive activities planned around very specialized interests;

-- interpretive activities planned at odd times of day or night;

-- interpretive activities planned for specific types of groups;

-- unannounced interpretation. That is, turn interpreters loose to informally chat with visitors in a picnic area or visitor center or in some area of interest. One to one interpretation will offer the greatest learning experience for both the interpreter and the visitor.

-- interpretation designed for different levels of sophistication, cultural backgrounds, educational pursuits;

-- ad infinitum.

My last suggestion for interpretation for retired persons is simply: TREAT THEM LIKE HUMAN BEINGS! It has often been philosophically stated that everyone you meet is your teacher and these persons are certainly no exception. If you take the time you will certainly receive ten-fold above what you give!

HAPPY INTERPRETING!

Examples of Tours Aboard the

S.S. JEREMIAH O'BRIEN

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